SHARP

Service Manual

SHARP 3000
RADIO CASSETTE / MIC MIXING
PLAY-CORD SYSTEM
FULL AUTO STOP

MODEL GF-3000H

SPECIFICATIONS

GENERAL

Type:	Portable monophonic cassette tape recorder with built-in LW/MW/FM 3-band radio with play-cord system
Power source:	AC 110/220/240V, 50Hz DC 6V (Four UM-2/SUM-2 batteries) DC 6V adapter jack
Power consumption:	9 watts
Speaker:	12cm, FEC (Free Edge Cone)Speaker, V.C. Impedance 8-ohm.
Power output:	(EIAJ) 1500mW Maximum 1800mW
Semiconductors:	1-IC (integrated circuit), 26-transistor and 21-diode (2 Light Emitting Diode)
Dimensions:	335mm (W) x 95mm (D) x 220mm (H)
Weight:	3.8kg (without batteries)
Input terminals:	1 EXT. MIC. (J101-A) 2 Remote control (J101-B) 3 EXT. DC power, 6V (J102) 4 AC input power (SO101) 5 REC/PB socket, DIN (5 pin)
Output terminals:	1 EXT. speaker, 8-ohm (J101-C) 2 REC. monitor (J101-D) 3 REC/PB socket, DIN (5 pin)

TAPE RECORDER SECTION

Type:	2-track monaural cassette tape recorder
Tape:	Philips type compact cassette tape
Tape speed:	4.8 cm/sec.
Recording system:	AC bias
Erasing system:	AC erasing
Recording time:	60 minutes (with C-60 tape)
Fast forward or rewind time:	100 sec. (with C-60 tape)
Frequency response:	50-12,000 Hz (with CrO_2 tape)
Wow and flutter:	0.4% (DIN)
S/N ratio:	45 dB

RADIO SECTION

Frequency range:	LW 150 ~ 285 kHz MW 520 ~ 1,620 kHz FM 87.6 ~ 108 MHz
Intermediate frequency:	LW/MW 455 kHz FM 10.7 MHz
Circuit system:	3-band superheterodyne system with play-cord system
Antenna:	LW/MW Ferrite core bar antenna FM Telescopic rod antenna

SHARP CORPORATION OSAKA, JAPAN

CABINET DISASSEMBLY

1. Pull out the power cord plug and adaptor plug from the unit.
2. Take out the cassette tape from the cassette compartment and four batteries from the battery compartment.
3. Remove the volume, tone and mic-volume control knobs and two tuning knobs.
4. Remove six screws retaining the cabinet back and lightly open it.
5. Disconnect the tip connected to the rod antenna.
6. Remove six screws retaining the audio P.W. board.
7. If necessary, remove three screws retaining the cabinet front and meter bracket retaining screws to remove cabinet front.

NOTE
When re-assembling the cabinet front, you can easily assemble by removing the pause knob.

PARTS IDENTIFICATION
(Refer to Figure 1)

1. Stop/Eject key
2. Play key
3. Fast forward key
4. Rewind key
5. Record key
6. Radio-Tape selector switch
7. Tape selector switch
8. Radio monitor switch
9. Radio-band selector
10. Tuning control for FM
11. Tuning control for MW and LW
12. Built-in microphone
13. Volume control
14. Tone control
15. Microphone volume control
16. Recording indicator
17. Counter reset button
18. Time counter
19. Cassette holder
20. Battery condition/Tuning/Record level meter
21. Pause switch
22. Dial lamp switch
23. Telescopic rod aerial
24. External microphone jack
25. Remote control jack
26. External speaker jack
27. Record monitor output jack
28. R.I.F. (Radio Interference Filter) switch
29. External DC power jack
30. Mains supply socket
31. Record/Playback socket (5 pin, DIN)
32. Mains voltage selector
33. Battery compartment lid

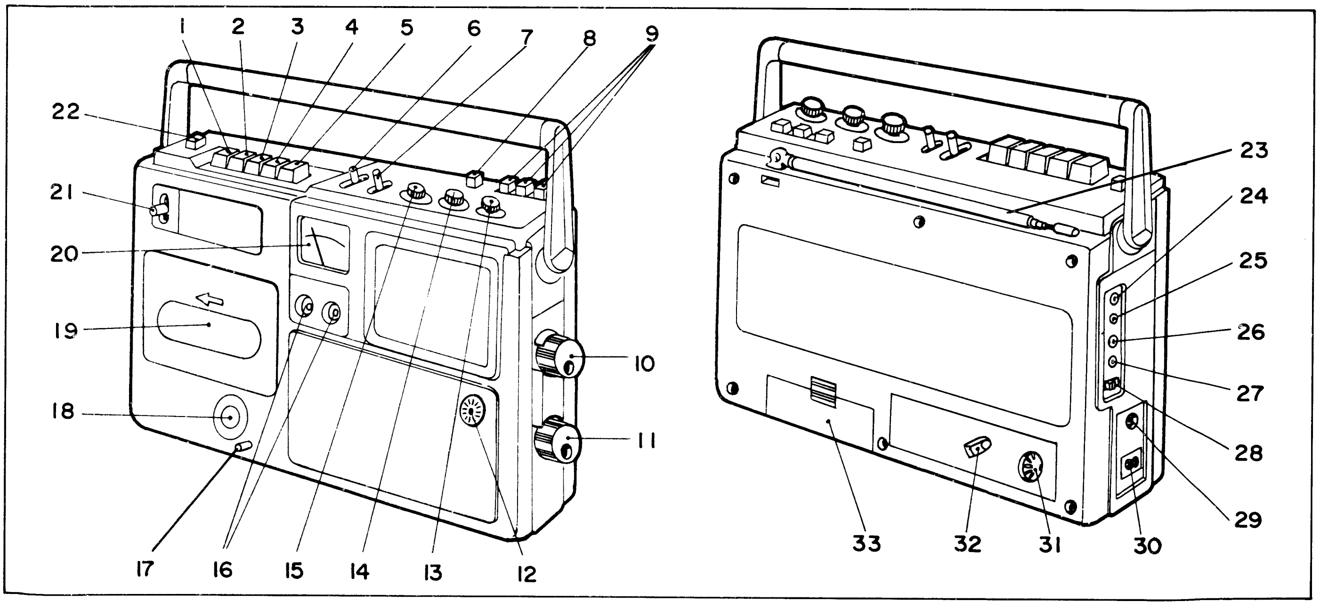


Figure 1

MECHANICAL FULL-AUTO STOP MECHANISM

- WHAT IS THE MECHANICAL FULL-AUTO STOP MECHANISM?

In the case of cassette type recorder equipped with the mechanical full-auto stop mechanism, as soon as the tape reaches its end all functions are stoped (for instance as a result of motor stopping) is any mode of such as PLAY, RECORD, FAST FORWARD and REWIND.

Compared with the ordinary method adopting solenoid plunger, this mechanism provides such advantages as no existance of excessive current consumption and disuse of the circuits related to solenoid plunger or the like, which enables the size of a portable tape recorder, in particular a battery powered one to be made further decreaced in dimensions.

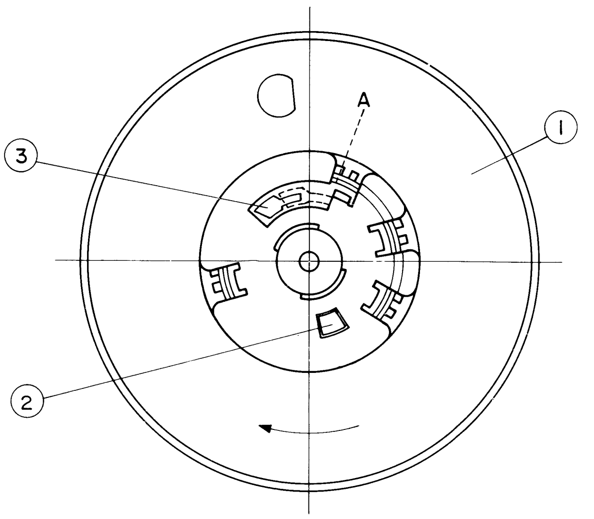


Figure 2

- FUNCTIONS

A. Flywheel (Refer to Figure 2.)

When the detection plate ① is rotated clockwise with respect to the flywheel there arises the following action each time it makes four rotations. Supposed that the starting point is where the clutch is disengaged (a click sound occurs), the pin ② of flywheel is projected in the initial stage of the second rotation (at the time, the pin ② returns to the original position after the cam ③ has moved to the position Ⓐ) and when the detection plate ① rotates by about 120° from the latter-half stage of the fourth rotation in accordance with the rise of its torque, the clutch between the flywheel and detection plate ① comes out of its place, at the time the pin ② returns to the original position.

B. STOP motion at PLAY or RECORD mode (Refer to Figure 3.)

When the tape runs out with PLAY or RECORD mode, tension of the tape is increased to rotate the stop arm and one end of the stop arm hits the stop lever to move it in the arrowed disection Ⓐ. At the time the cam ③ of flywheel hits the notch ⓐ of stop lever and as a result of the rotation of flywheel the stop lever is moved in the arrowed direction Ⓑ. Thus button lock is released to make the button return to the original position – STOP motion is completed.

C. STOP motion at FAST FORWARD or REWIND mode (Refer to Figure 3.)

In FAST FORWARD or REWIND mode rotation of the flywheel is transmitted to the detection plate ① by means of the clutch torque of flywheel.

Rotation of the detection plate ① is transmitted to the take-up turntable (for fast forward operation) by means of the fast forward roller or to the supply turntable (for rewind operation), thus FAST FORWARD or REWIND is being made. As the tape reaches its end, rotation of the take-up turntable or supply turntable is stopped and also stop the rotation of fast forward roller and detection plate ① of the flywheel. On the other hand the flywheel is being rotated by the motor and therefore the pin ② of flywheel jets out (refer to "Flywheel"), to move the part ⓑ of stop lever to the direction Ⓐ. As a result the cam ③ of flywheel hits the notch ⓐ of stop lever (at the time the pin ② returns to the original position) and the stop lever is moved in the direction Ⓑ by means of the rotation of flywheel to release the button lock, thus STOP motion being completed.

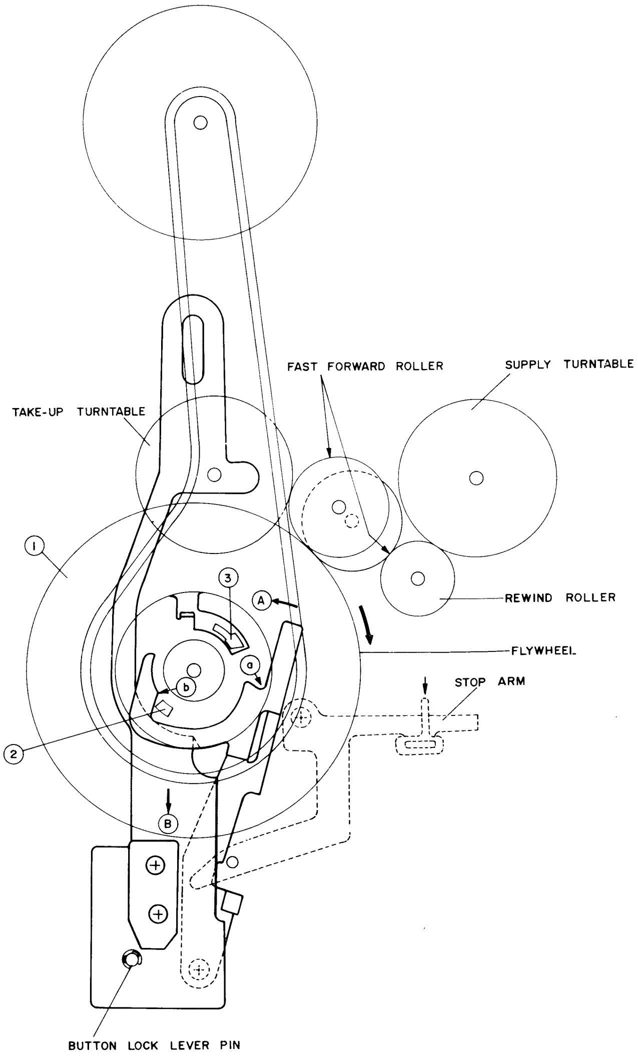


Figure 3

MECHANICAL ADJUSTMENT

▪ FLYWHEEL THRUST CLEARANCE ADJUSTMENT

(Refer to Figure 4.)

Slowly tighten the screw for flywheel thrust clearance until the thrust clearance becomes 0(zero) and loosen the screw by 1/8 turn from this point. Since screw's pitch is 0.8mm, thrust clearance of about 0.1mm is obtained.

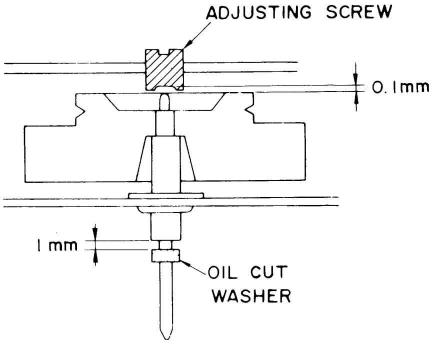
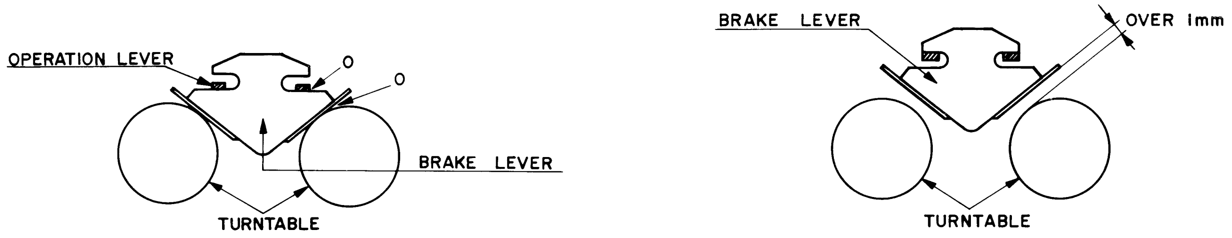

ADJUSTING SCREW
0.1mm
1 mm
OIL CUT WASHER

Figure 4

▪ BRAKE MECHANISM ADJUSTMENT

(Refer to Figure 5.)

1. Check that the brake lever is pressed against both turntables in STOP mode and that the brake lever is apart at the same distance from both turntables in PLAY, FAST FORWARD and REWIND modes.
2. Adjust it by bending the operation lever when the distance is abnormal.


OPERATION LEVER
O
O
BRAKE LEVER
TURNTABLE
BRAKE LEVER
OVER 1mm
TURNTABLE

PLAY . FF. REW MODE

Figure 5

▪ CHECK AND ADJUSTMENT OF AUTO STOP MECHANISM

(Refer to Figure 6.)

1. With power supply cut off, depress the PLAY push-button.
2. Lightly pushing back the tape arm, rotate the flywheel in the direction of arrow Ⓐ and check that stop lever assembly moves toward the button block, and is released by the stop lever adjusting plate. The sub-chassis should automatically retract.
3. If the auto stop mechanism does not function as previously, loosen the two stop lever adjusting plate screws and move the stop lever adjusting plate to left or right position and re-tighten screws.

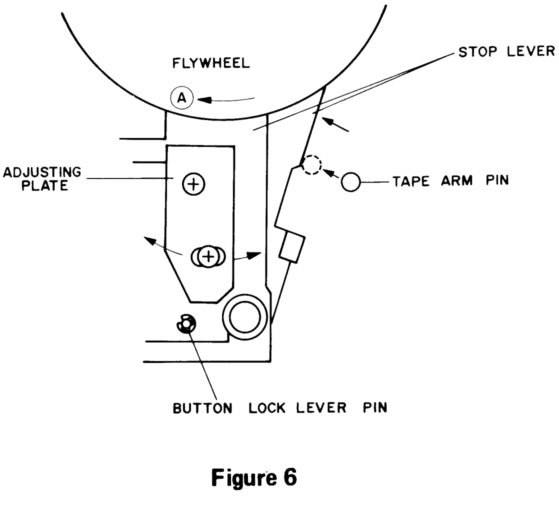

FLYWHEEL
STOP LEVER
Ⓐ
ADJUSTING PLATE
TAPE ARM PIN
BUTTON LOCK LEVER PIN

Figure 6

■ PRESSURE ROLLER PRESSURE ADJUSTMENT

(Refer to Figure 7.)

1. Setting the unit in PLAY mode with power supply turned on, push the point A with use of tension gauge to make the pressure roller apart from the capstan shaft. Then, gradually release the tension gauge and read its value when the pressure roller starts to rotate.
2. It is normal when the tension gauge reads 260 – 312 gr. If the above value is not satisfied, change the setting position of pressure spring.

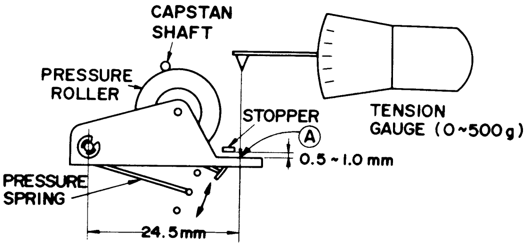

CAPSTAN SHAFT
PRESSURE ROLLER
STOPPER
TENSION GAUGE (0~500g)
A
0.5 ~ 1.0 mm
PRESSURE SPRING
24.5mm

Figure 7

■ PRESSURE ROLLER POSITION ADJUSTMENT

(Refer to Figure 7.)

1. Cut off the power supply and depress the PLAY pushbutton.
2. While pressure roller depressing the capstan, adjust the gap between the pressure roller lever and stopper for 0.5 – 1.0mm with long-nose pliers.

■ TAKE-UP PULLEY PRESSURE ADJUSTMENT

(Refer to Figure 8.)

1. With power supply turned on, push the PLAY pushbutton.
2. Hook the tension gauge at the end of slip roller lever and pull the tension gauge to make the take-up pulley apart from the take-up turntable. Then gradually release the tension gauge and read its value when the take-up turntable starts to rotate.
3. It is normal when the tension gauge reads 30 – 60 gr. If the above value is not satisfied, change the setting position of slip roller lever spring.

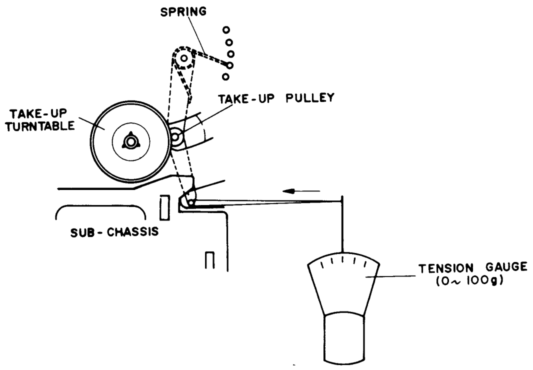

SPRING
TAKE-UP PULLEY
TAKE-UP TURNTABLE
SUB-CHASSIS
TENSION GAUGE (0~100g)

Figure 8

■ TORQUE CHECK IN PLAY MODE

(Refer to Figure 9.)

1. Set the torque measuring reel to the take-up turntable and hook the tension gauge at measuring point of reel.
2. Put the unit in PLAY mode with power supply turned on.
3. Then, rotate the measuring reel in the same direction as for turntable and read the torque value when the pointer is stabilized.
4. The take-up torque should be 40 – 60 gr.cm.

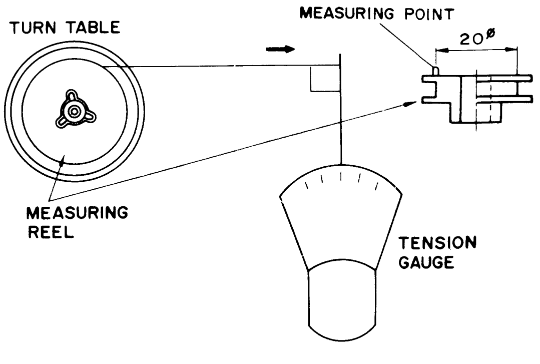

TURN TABLE
MEASURING POINT
20ø
MEASURING REEL
TENSION GAUGE

Figure 9

ELECTRICAL MEASUREMENT

* This unit operaters on DC 6V. Check that the power supply is exactly 6V before measurement.
* Set the Radio-Tape selector switch (SW1-A ~ F) to "TAPE" position.

■ RECORD OSCILLATOR BIAS FREQUENCY AND BIAS CURRENT ADJUSTMENT

(Refer to Figure 10 and 11)

1) Place the unit in RECORD mode.
2) Connect 100-ohm, 5% resistor between the ground tip and the lead of R/P HEAD.
3) Connect the VTVM across the 100 ohm resistor.
4) Rotate the variable resistor (VR101) to its mechanical center position.
5) Set the RIF switch (SW4) to "A" position and adjust the dust core of the OSCILLATOR COIL (L102) so that the bias oscillator frequency is at 53±3 kHz.
6) Check the bias current at both "A" and "B" position of RIF switch. If you find that the bias current is much in "A" position than "B" position.
7) Reset the RIF switch to "A" position and adjust the bias current for 500μA by turning the variable resistor (VR101).
8) Set the RIF switch to "B" position, then check that the variation of bias oscillator frequency is –5 ~ –7 kHz.

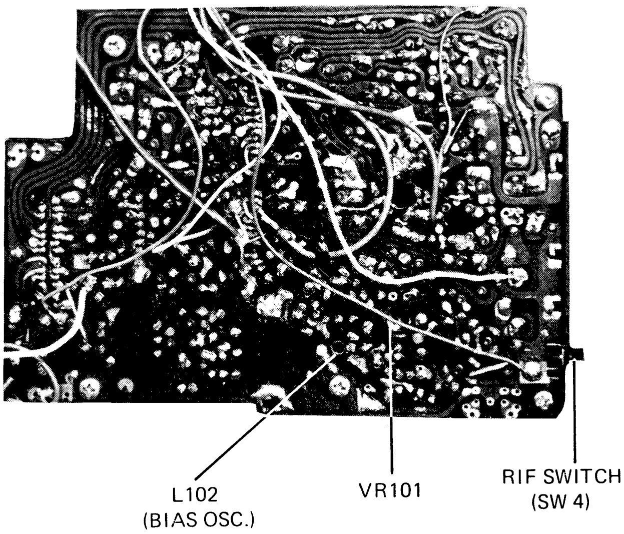

L102
(BIAS OSC.)
VR101
RIF SWITCH
(SW 4)

Figure 10

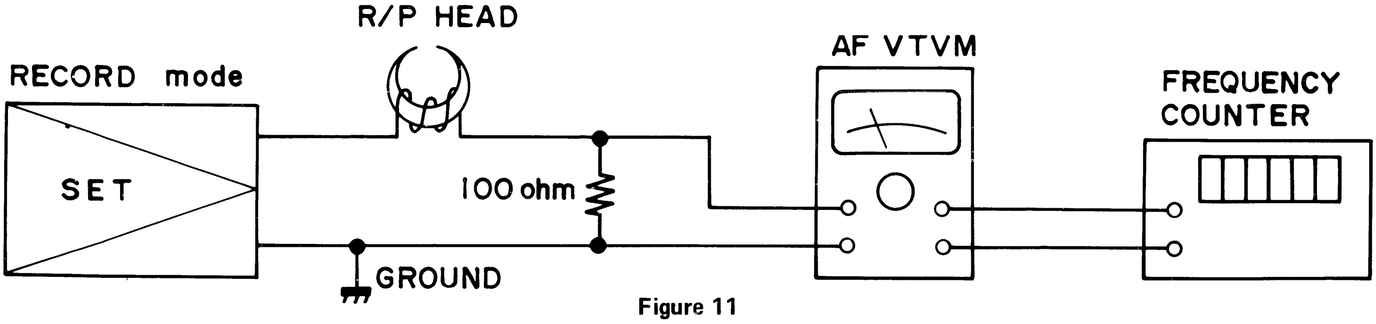

R/P HEAD
RECORD mode
SET
100 ohm
GROUND
AF VTVM
FREQUENCY
COUNTER

Figure 11

■ MEASUREMENT OF RECORD AMPLIFIER SENSITIVITY

(Refer to Figure 12)

1) Place the unit in RECORD mode.
2) Short circuit the secondary coil of the OSCILLATOR COIL (L102) to stop bias oscillation.
3) Connect a 100 ohm, 5% resistor to the ground lead of the R/P HEAD.
4) Connect the audio signal generator for 1,000 Hz, –78dB (0dB = 1V) to the EXT. MIC. jack (J101-A).
5) Connect an AC VTVM across the 100 ohm resistor. If the record amplifier sensitivity is normal, the reading on AC VTVM should be approximately 3.5mV.

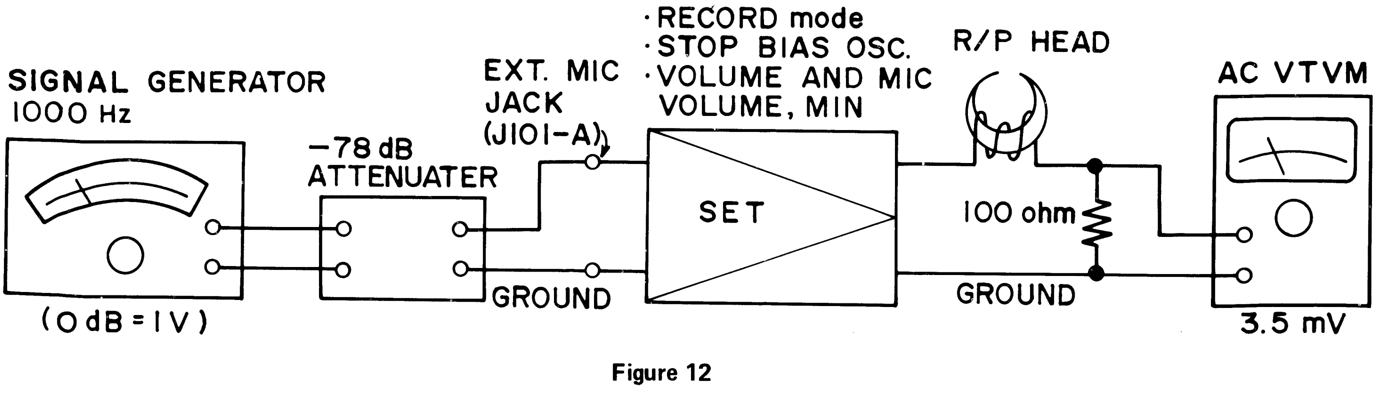

·RECORD mode
·STOP BIAS OSC.
·VOLUME AND MIC
VOLUME, MIN
SIGNAL GENERATOR
1000 Hz
(0dB=1V)
–78 dB
ATTENUATER
EXT. MIC
JACK
(J101-A)
GROUND
SET
R/P HEAD
100 ohm
GROUND
AC VTVM
3.5 mV

Figure 12

- **PLAYBACK AMPLIFIER SENSITIVITY CHECK**
  (Refer to Figure 13)
  1) Place the unit in PLAYBACK mode with the VOLUME CONTROL (VR102) at maximum.
  2) Rotate the TONE CONTROL (VR103) to "HIGH" position.
  3) Connect an 8-ohm, 5W, 5% resistor to the EXT. SPEAKER jack (J101-C).
  4) Connect the audio signal generator for 1,000 Hz, –72dB (0dB = 1V) across, the ground lead of the R/P HEAD.
  5) Connect an AC VTVM across the 8-ohm resistor. If the playback amplifier sensitivity is normal, the reading on the AC VTVM should be approximately 1.8V.

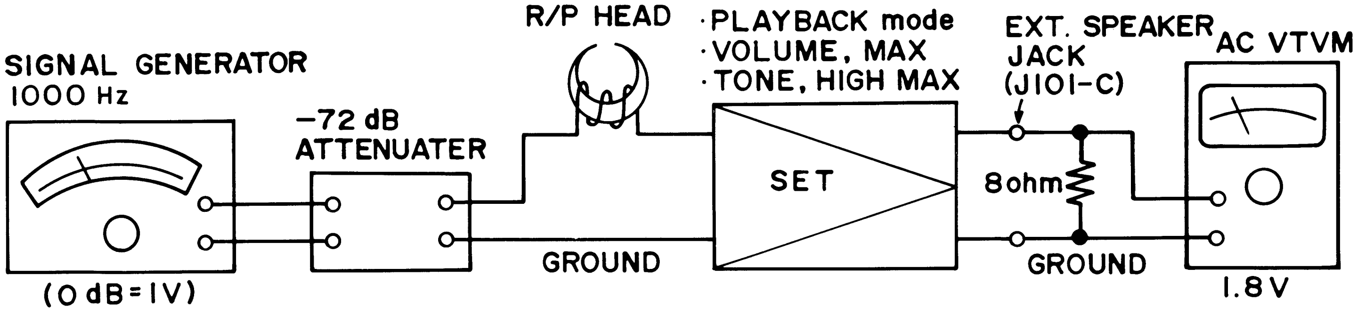

SIGNAL GENERATOR
1000 Hz
(0 dB=1V)
–72 dB
ATTENUATER
R/P HEAD
GROUND
·PLAYBACK mode
·VOLUME, MAX
·TONE, HIGH MAX
SET
EXT. SPEAKER JACK
(J101-C)
8ohm
GROUND
AC VTVM
1.8V

Figure 13

- ERASE VOLTAGE CHECK
  (Refer to Figure 14)
  1) Place the unit in RECORD mode.
  2) Connect an 1 ohm, 5% resistor to the ground lead of the ERASE HEAD.
  3) Connect an AC VTVM across the 1 ohm resistor. If the erase voltage is normal, the AC VTVM should be show 55 ~ 85mV.

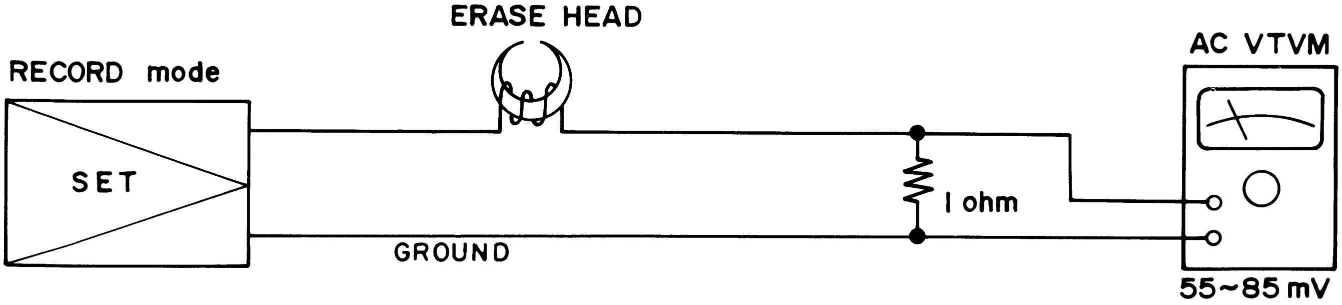

ERASE HEAD
RECORD mode
SET
GROUND
1 ohm
AC VTVM
55~85 mV

Figure 14

GENERAL ALIGNMENT INSTRUCTION

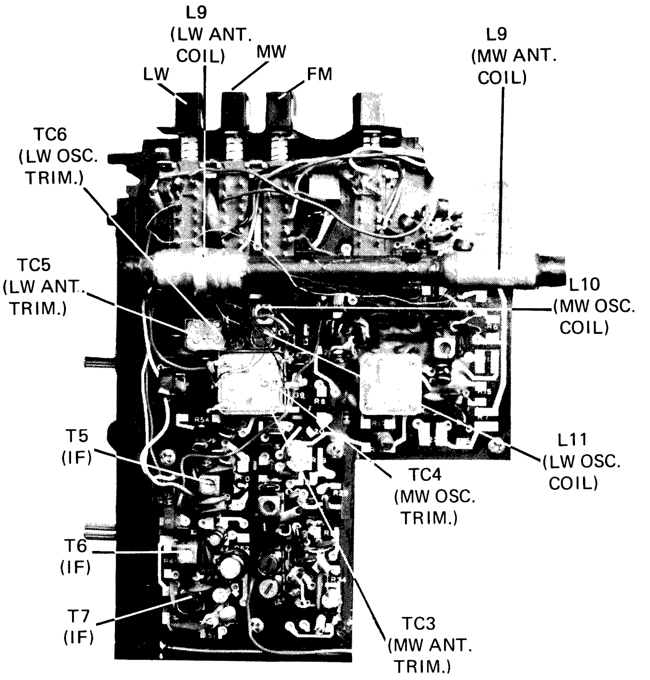

L9
(LW ANT.
COIL)
MW
LW
FM
L9
(MW ANT.
COIL)
TC6
(LW OSC.
TRIM.)
TC5
(LW ANT.
TRIM.)
L10
(MW OSC.
COIL)
T5
(IF)
TC4
(MW OSC.
TRIM.)
L11
(LW OSC.
COIL)
T6
(IF)
T7
(IF)
TC3
(MW ANT.
TRIM.)

Figure 15

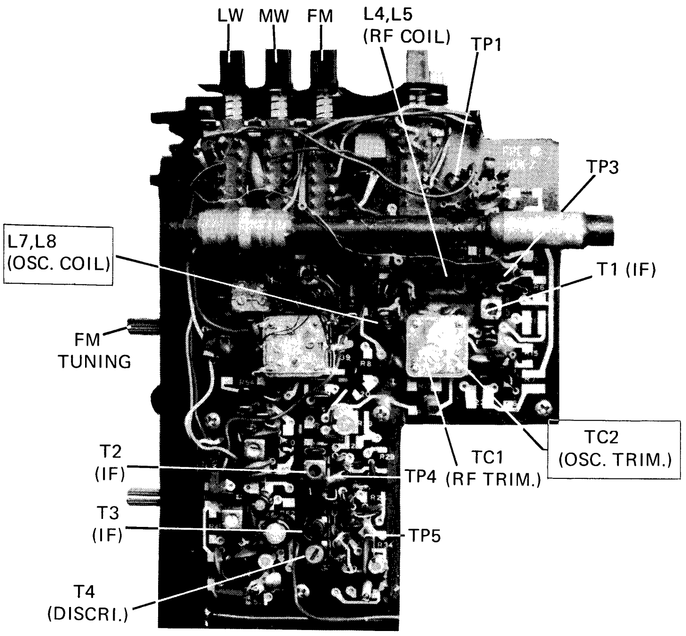

LW
MW
FM
L4,L5
(RF COIL)
TP1
TP3
L7,L8
(OSC. COIL)
T1 (IF)
FM
TUNING
TC2
(OSC. TRIM.)
T2
(IF)
TC1
TP4
(RF TRIM.)
T3
(IF)
TP5
T4
(DISCRI.)

Figure 16

Should it become necessary at any time to check the alignment of this receiver, proceed as follows;

1) Connect an output meter across the speaker voice coil lugs.
2) Set the volume control to maximum.
3) Attenuate the signals from the generator enough to swing the most sensitive range of the output meter.
4) Use a non-metallic alignment tool.
5) Repeat adjustments to insure good results.
6) Set the Radio-Tape selector switch (SW1-A ~ F) to "RADIO" position and Radio Monitor Switch (SW3-A) to "NORMAL" position.

AM IF ALIGNMENT CHART (LW, MW)

Set the Radio Band Selector Switch (SW3-B ~ D) to "MW" position.

STEP	TEST STAGE	SIGNAL GENERATOR		RECEIVER		ADJUSTMENT
		CONNECTION TO RECEIVER	INPUT SIGNAL FREQUENCY	DIAL SETTING	REMARKS	
1	IF	Connect signal generator through a 10K ohm resistor to the antenna tuning capacitor (VC3). Ground lead to the receiver chassis.	Exactly 455 kHz. (400Hz, 30%, AM modulated)	High end of dial. (minimum capacity)	Adjust for maximum output on speaker voice coil lugs.	T5 (Yellow) T6 (White) T7 (Black)
		Repeat until no further improvement can be made.				

AM RF ALIGNMENT CHART (LW,MW)

STEP	BAND	TEST STAGE	SIGNAL GENERATOR		RECEIVER		ADJUSTMENT
			CONNECTION TO RECEIVER	INPUT SIGNAL FREQUENCY	DIAL SETTING	REMARKS	
1	MW	Band Coverage	Use radiating loop. Loop of several turns of wire, or place generator lead close to receiver for adequate signal pickup. Connect generator output to one end of this wire.	Exactly 510 kHz. (400Hz, 30%, AM modulated)	Low end of dial. (maximum capacity).	Adjust for maximum output on speaker voice coil lugs.	Adjust the MW oscillator coil (L10).
2	MW		Same as step 1.	Exactly 1650 kHz. (400Hz, 30%, AM modulated)	High end of dial. (minimum capacity)	Same as step 1.	Adjust the MW oscillator trimmer (TC4).
3	MW	Tracking	Same as step 1.	Exactly 600kHz. (400Hz, 30%, AM modulated)	600 kHz.	Same as step 1.	Adjust the MW antenna coil (L9) (See NOTE A)
4	MW		Same as step 1.	Exactly 1400 kHz. (400Hz, 30%, AM modulated)	1400 kHz.	Same as step 1.	Adjust the MW antenna trimmer (TC3). (See NOTE A)
5	MW		Repeat steps 1, 2, 3 and 4 until no further improvement can be made.				
6	LW	Band Coverage	Same as step 1.	Exactly 145 kHz. (400Hz, 30%, AM modulated)	Low end of dial. (maximum capacity)	Same as step 1.	Adjust the LW oscillator coil (L11).
7	LW		Same as step 1.	Exactly 295 kHz. (400Hz, 30%, AM modulated)	High end of dial. (minimum capacity)	Same as step 1.	Adjust the LW oscillator trimmer (TC6).
8	LW	Tracking	Same as step 1.	Exactly 160 kHz. (400Hz, 30%, AM modulated)	160 kHz.	Same as step 1.	Adjust the LW antenna coil (L9) (See NOTE A)
9	LW		Same as step 1.	Exactly 260 kHz (400Hz, 30%, AM modulated)	260 kHz.	Same as stop 1.	Adjust the LW antenna trimmer (TC5). (See NOTE A)
10	LW	Repeat steps 6,7,8 and 9 until no further improvement can be made.					

NOTE A

Check the alignment of the receiver antenna coil by bringing a piece of ferrite (such as a coil slug) near the antenna loop stick, then a piece of brass. If ferrite increases output, loop requires more inductance. If brass increases output, loop requires less inductance. Change loop inductance by sliding the bobbin toward the center of ferrite core to increase inductance, or away to decrease inductance.

FM ALIGNMENT CHART

Set the Radio Band Selector switch (SW3-B ~ D) to "FM" position.

STEP	TEST STAGE	SIGNAL GENERATOR		RECEIVER		ADJUSTMENT
		CONNECTION TO RECEIVER	INPUT SIGNAL FREQUENCY	DIAL SETTING	REMARKS	
1	IF	Connect signal generator through a 5PF capacitor to test point TP-3 Connect generator ground lead to the point TP2	Exactly 10.7 MHz. (400 Hz, 30%, AM modulated)	High end of dial. (minimum capacity)	Connect VTVM (AC) between test point TP-4 and chassis ground.	Detune T4 (Orange). Tune T1(Violet), T2 (Violet) and T3 (Green) for maximum indication.
2	Ratio Detector	Same as step 1.	Exactly 10.7 MHz. (Unmodulated)	Same as step 1.	See NOTE B.	See NOTE B.
3	Band Coverage	Connect signal generator through a dummy, including output impedance of signal generator to the FM antenna (TP1) . (Refer to Figure 17) Ground lead of generator connected to the receiver chassis. (TP2) .	Exactly 88 MHz (400 Hz, 30%. FM modulated)	Low end of dial. (maximum capacity)	Adjust for maximum output speaker voice coil lugs.	Adjust the FM oscillator coil (L7, L8).
4		Same as step 3.	Exactly 106 MHz. (400 Hz, 30%. FM modulated)	High end of dial. (minimum capacity)	Same as step 3.	Adjust the FM oscillator trimmer (TC2).
5	Tracking	Same as step 3.	Exactly 90 MHz. (400Hz, 30%. FM modulated)	90 MHz	Same as step 3.	Adjust the FM RF coil (L4, L5).
6		Same as step 3.	Exactly 104 MHz (400 Hz, 30%, FM modulated)	104 MHz	Same as step 3.	Adjust the FM RF trimmer (TC1).
7		Repeat steps 3, 4, 5 and 6 until no further improvement can be made.				

NOTE B

1) Connect VTVM (0.1 volts range DC scale) between test point TP5 and chassis ground.
2) Adjust T4(Orange) for 0 volts reading on VTVM.
3) Change signal generator frequency 10.7 MHz + 100 kHz and – 100 kHz approximately.
4) Adjust T3(Green) for balanced peaks. Peak separation should be approximately 200 kHz.

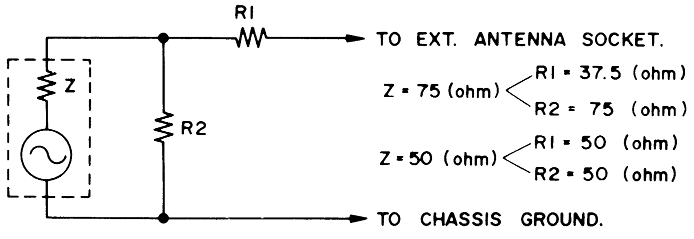


Figure 1 FM DUMMY

Figure 17

THE INSTRUCTION OF FREQUENCY ADJUSTMENT

In order to comply with FTZ rule: Nr. 358 S757, please fix the low end of dial frequency (87.5 MHz) and the high end of dial frequency (107.9 MHz) on FM band, by adjusting oscillation coil (L7, L8) and oscillation trimmer (TC2), repectively, as illustrated in Figure 16.

CIRCUIT DESCRIPTION

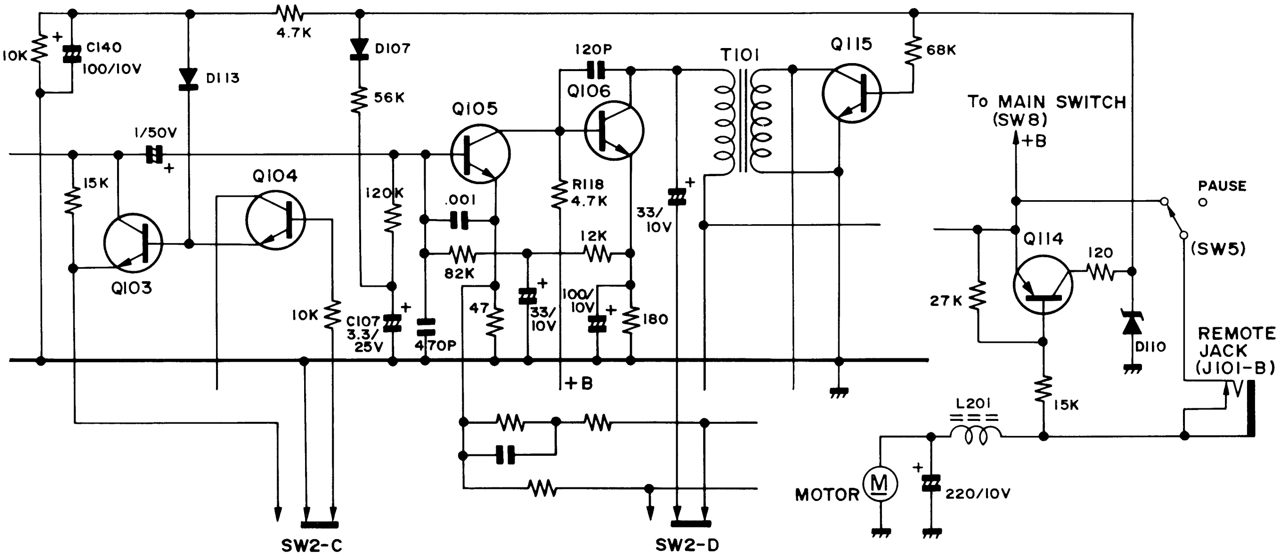

10K
C140
100/10V
4.7K
D107
D113
56K
120P
Q106
Q105
T101
Q115
68K
To MAIN SWITCH
(SW8)
+B
1/50V
15K
Q104
120K
.001
R118
4.7K
33/
10V
PAUSE
O
(SW5)
Q114
120
12K
82K
Q103
10K
C107
3.3/
25V
470P
47
33/
10V
100/
10V
180
27K
D110
REMOTE
JACK
(J101-B)
+B
L201
15K
MOTOR
M
220/10V
SW2-C
SW2-D

Figure 18

■ FUNCTION OF ELECTRONIC PAUSE CIRCUIT:

Different from the electronic pause circuit, the conventional electric pause circuit can make only the motor be turned on or off and therefore, there arises an unpleasant noise when the tape stops from its constant speed running or when the tape provides constant speed from its starting time.

To prevent this noise, the electronic pause circuit is so deviced as to;

(1) cut-off the record/playback amplifier as well as the motor switch, and

(2) keep the record/playback amplifier be cut-off until the tape running speed.becomes constant after the motor switch is turned on.

■ MOVEMENT:

When the pause switch SW5 is set to "PAUSE" position, the transistor Q114 is turned on to produce the voltage of 4.0V at the zener diode D110 to be charged to the capacitors C107 and C140.

As a result, the base bias voltage of transistor Q105 rises to be saturated and the transistor Q105 loses its amplifying function. With the transistor Q105 saturated, the base bias voltage of transistor Q106 drops by means of resistor R118 and thus the base bias voltage is cut off. Then, the transistor Q106 also loses amplifying function, stopping audio output. With the transistor Q103, impedance between its collector and base is reduced to short the input circuit. When the pause switch is replaced to "OFF" position, the voltage charged to the capacitors C107 and C140 is discharged in a certain time (about 0.5 sec.) and the transistors Q105, Q106 and Q103 start to function. The transistor Q115 is a circuit to short the secondary side of record transformer T101, preventing click sound possibly caused when the pause switch is operated.

BLOCK DIAGRAM

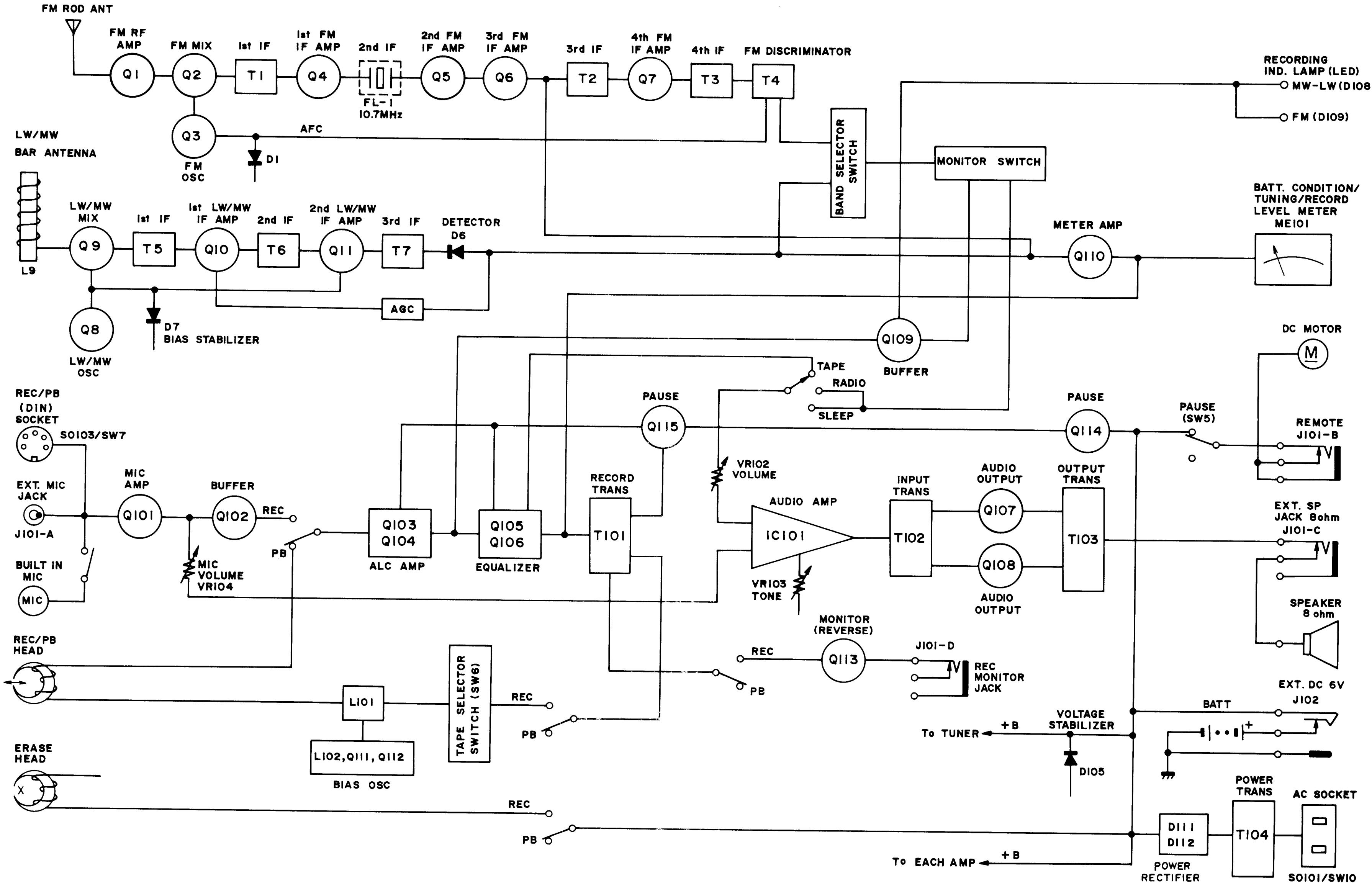

FM ROD ANT
FM RF AMP
Q1
FM MIX
Q2
1st IF
T1
1st FM IF AMP
Q4
2nd IF
FL-1 10.7MHz
2nd FM IF AMP
Q5
3rd FM IF AMP
Q6
3rd IF
T2
4th FM IF AMP
Q7
4th IF
T3
FM DISCRIMINATOR
T4
RECORDING IND. LAMP (LED)
MW-LW (D108)
FM (D109)
Q3
FM OSC
AFC
D1
LW/MW BAR ANTENNA
BAND SELECTOR SWITCH
MONITOR SWITCH
L9
LW/MW MIX
Q9
1st IF
T5
1st LW/MW IF AMP
Q10
2nd IF
T6
2nd LW/MW IF AMP
Q11
3rd IF
T7
DETECTOR D6
METER AMP
Q110
BATT. CONDITION/ TUNING/RECORD LEVEL METER ME101
AGC
Q8
LW/MW OSC
D7 BIAS STABILIZER
Q109
BUFFER
DC MOTOR
M
TAPE
RADIO
SLEEP
PAUSE
Q115
PAUSE
Q114
PAUSE (SW5)
REMOTE J101-B
REC/PB (DIN) SOCKET
S0103/SW7
EXT. MIC JACK
J101-A
MIC AMP
Q101
BUFFER
Q102
REC
PB
Q103 Q104
ALC AMP
Q105 Q106
EQUALIZER
RECORD TRANS
T101
VR102 VOLUME
AUDIO AMP
IC101
INPUT TRANS
T102
AUDIO OUTPUT
Q107
Q108
AUDIO OUTPUT
OUTPUT TRANS
T103
EXT. SP JACK 8ohm J101-C
BUILT IN MIC
MIC
MIC VOLUME VR104
VR103 TONE
SPEAKER 8 ohm
MONITOR (REVERSE)
REC
Q113
PB
J101-D
REC MONITOR JACK
REC/PB HEAD
L101
L102, Q111, Q112
BIAS OSC
TAPE SELECTOR SWITCH (SW6)
REC
PB
EXT. DC 6V J102
BATT
+B
To TUNER
VOLTAGE STABILIZER
D105
ERASE HEAD
REC
PB
POWER TRANS
AC SOCKET
D111 D112
POWER RECTIFIER
T104
S0101/SW10
+B
To EACH AMP

Figure 19

IC101 RH-IX0934AFZZ

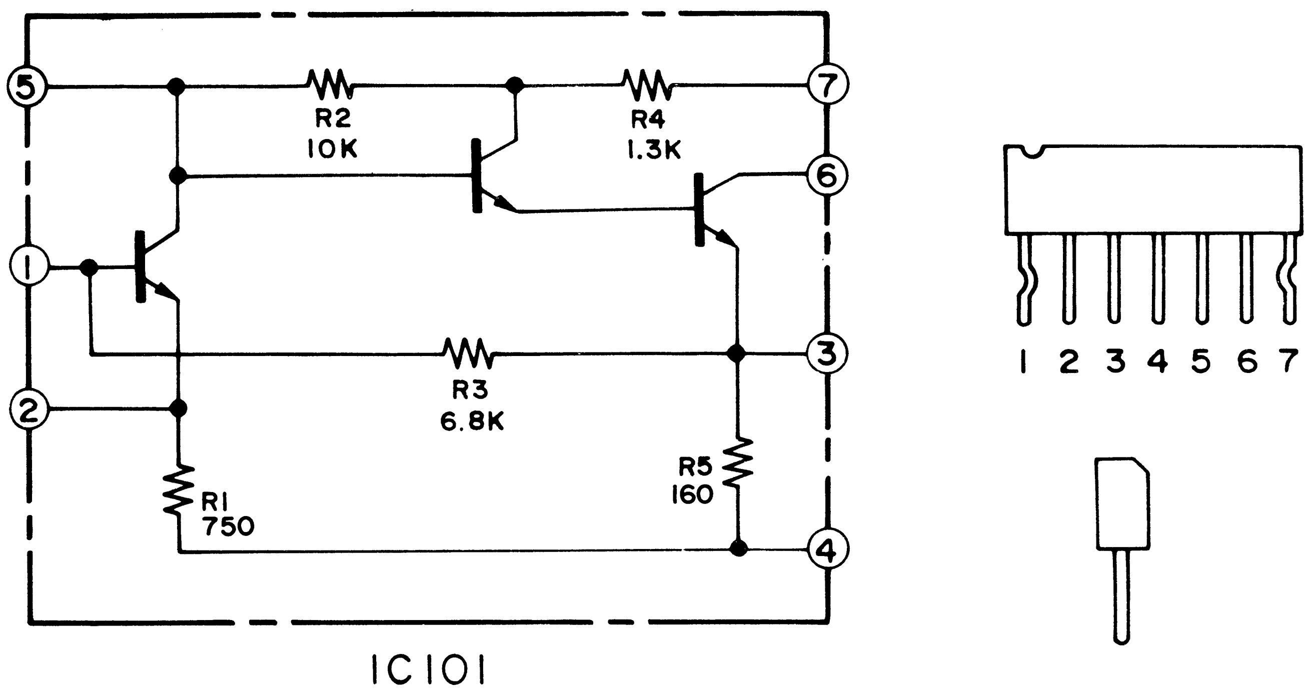
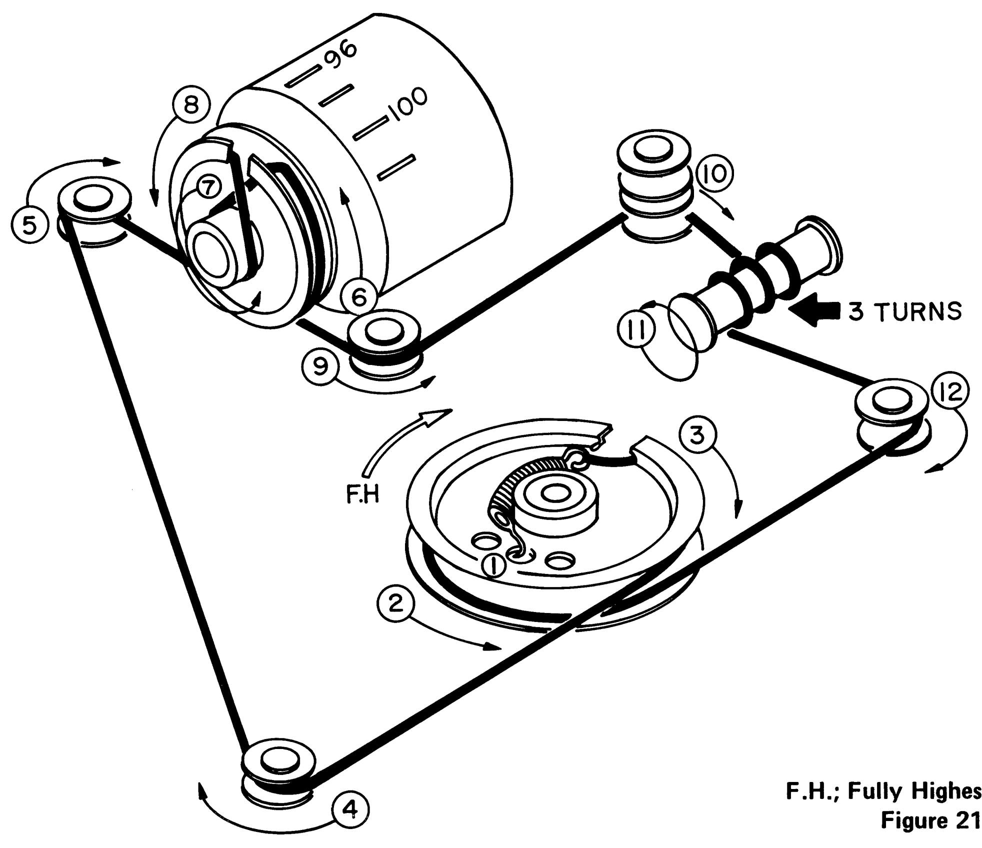
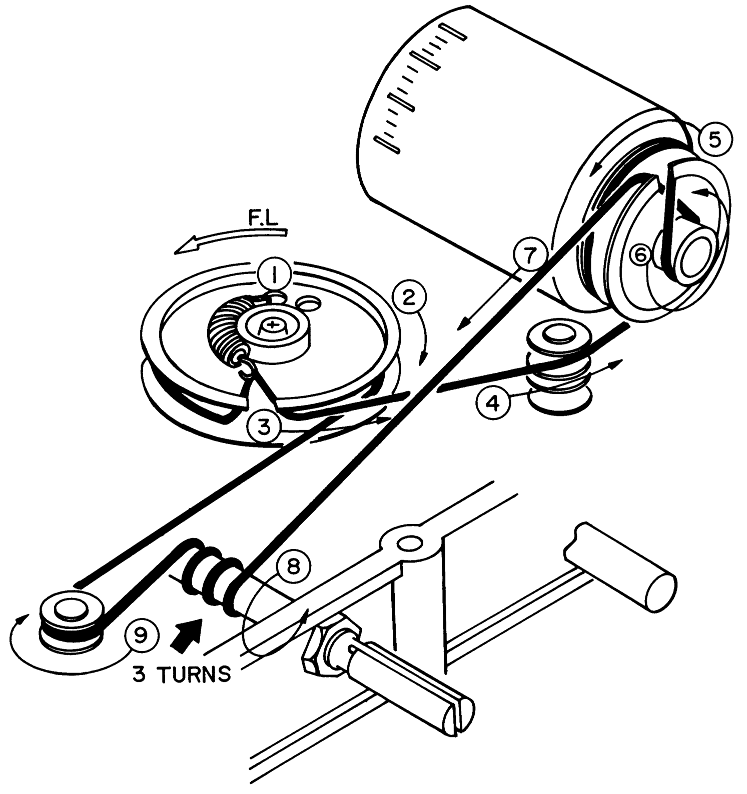

5
7
6
1
3
2
4
R2
10K
R4
1.3K
R3
6.8K
R5
160
R1
750
IC101
1 2 3 4 5 6 7

Figure 20 EQUIVALENT CIRCUIT

Caution: DIAL CORD STRINGING
Do the dial cord stringing for FM band first.


96
100
8
7
5
6
9
10
11
3 TURNS
12
3
F.H
1
2
4

F.H.; Fully Highest position
Figure 21


5
F.L
1
2
7
6
3
4
8
9
3 TURNS

F.L.; Fully Lowest position
Figure 22

NOTES

1) FREQ. RANGE
   LW 150~285kHz
   MW 520~1620kHz
   FM 87.6~108MHz
2) IF LW/MW 455kHz, FM10.7MHz
3) CAPACITANCE VALUES ARE IN MFD P=MMFD
4) RESISTANCE VALUES ARE IN OHM K=1000
5) SW1-A~F: TAPE/RADIO SELECTOR (T;TAPE R;RADIO S;SLEEP) SWITCH AT "TAPE" POSITION.
6) SW2-A~J: REC/P.B. SWITCH AT "P.B." POSITION.
7) SW3-A :RADIO MONITOR SWITCH AT "NORMAL" POSITION.
8) SW3-B~D: BAND SELECTOR SWITCH AT "FM" POSITION. .
9) SW4: RIF SWITCH
10) SW5: PAUSE SWITCH
11) SW6: TAPE SELECTOR SWITCH
12) SW7: BUILT-IN MIC. ON-OFF SWITCH
13) SW8: MAIN SWITCH
14) SW9: LIGHTING SWITCH
15) SW10: AC/DC SELECTOR SWITCH

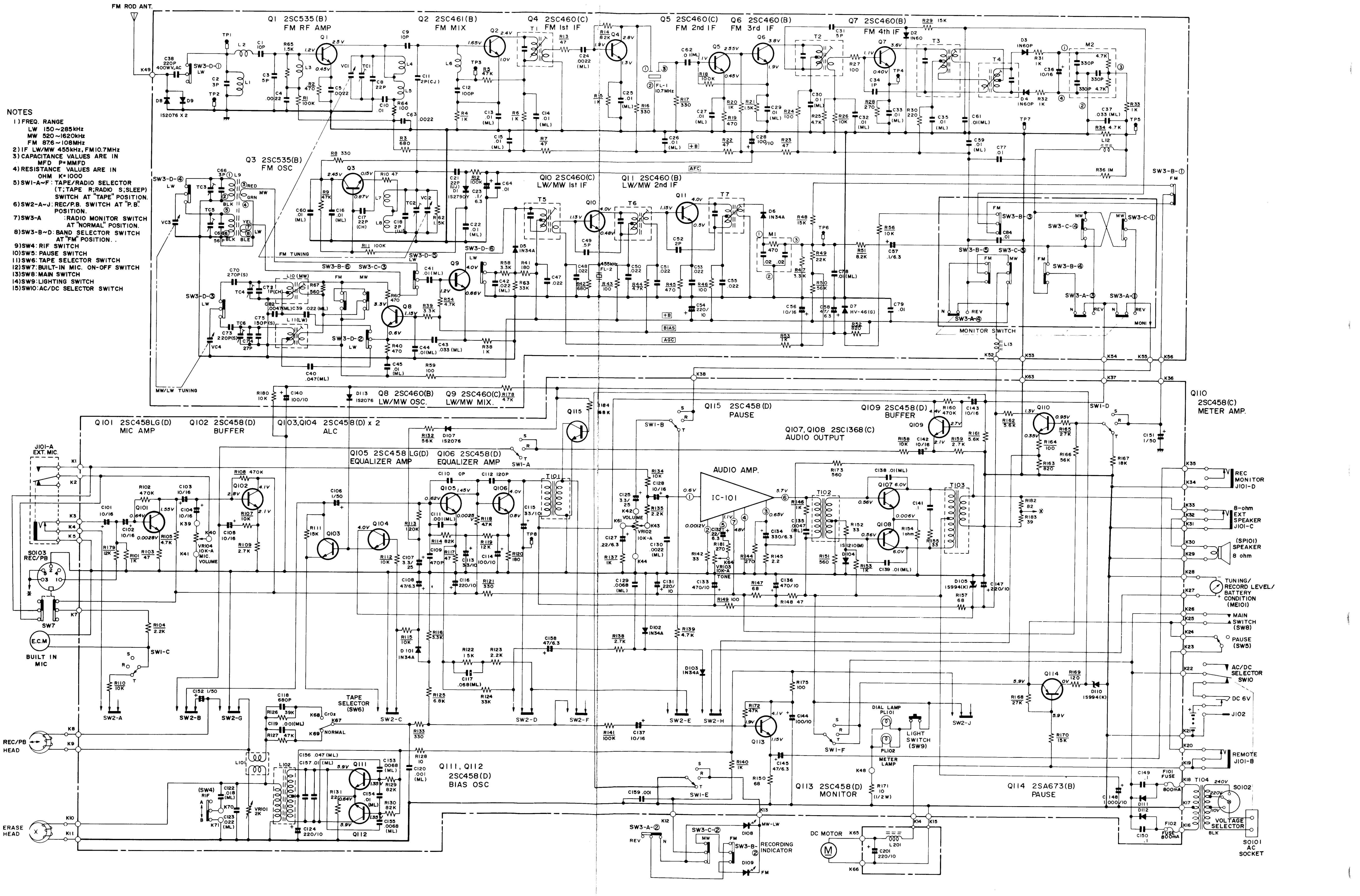
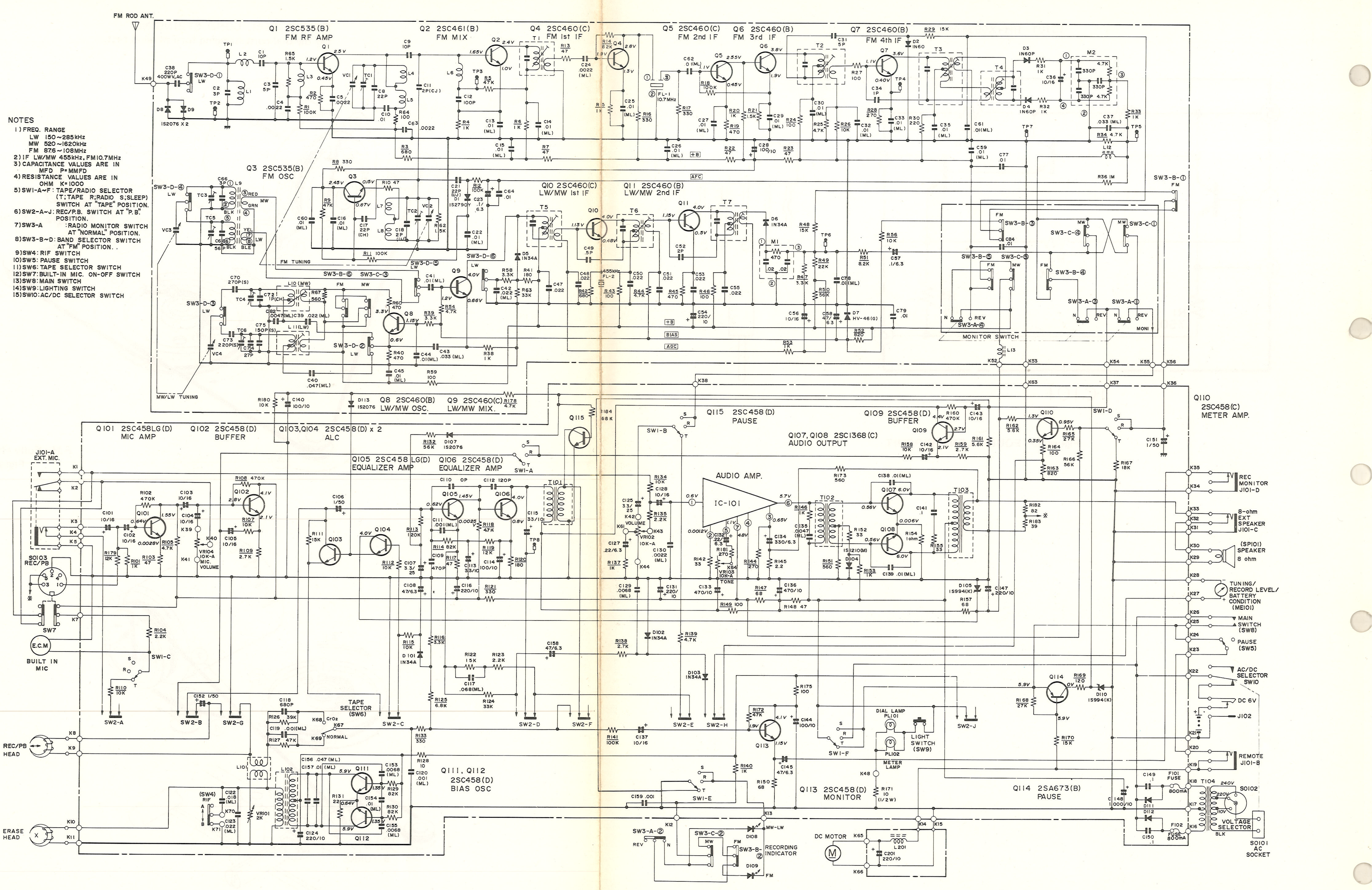

FM ROD ANT.
Q1 2SC535(B) FM RF AMP
Q2 2SC461(B) FM MIX
Q4 2SC460(C) FM 1st IF
Q5 2SC460(C) FM 2nd IF
Q6 2SC460(B) FM 3rd IF
Q7 2SC460(B) FM 4th IF
Q3 2SC535(B) FM OSC
Q10 2SC460(C) LW/MW 1st IF
Q11 2SC460(B) LW/MW 2nd IF
Q8 2SC460(B) LW/MW OSC.
Q9 2SC460(C) LW/MW MIX.
FM TUNING
MW/LW TUNING
MONITOR SWITCH
Q110 2SC458(C) METER AMP.
Q101 2SC458LG(D) MIC AMP
Q102 2SC458(D) BUFFER
Q103, Q104 2SC458(D) x 2 ALC
Q105 2SC458LG(D) EQUALIZER AMP
Q106 2SC458(D) EQUALIZER AMP
Q115 2SC458(D) PAUSE
Q109 2SC458(D) BUFFER
Q107, Q108 2SC1368(C) AUDIO OUTPUT
AUDIO AMP.
IC-101
VOLUME
TONE
J101-A EXT. MIC.
S0103 REC/PB
SW7
E.C.M
BUILT IN MIC
REC/PB HEAD
ERASE HEAD
TAPE SELECTOR (SW6)
NORMAL
Q111, Q112 2SC458(D) BIAS OSC
Q113 2SC458(D) MONITOR
Q114 2SA673(B) PAUSE
DIAL LAMP PL101
LIGHT SWITCH (SW9)
METER LAMP
RECORDING INDICATOR
DC MOTOR
REC MONITOR J101-D
8-ohm EXT SPEAKER J101-C
(SP101) SPEAKER 8 ohm
TUNING/ RECORD LEVEL/ BATTERY CONDITION (ME101)
MAIN SWITCH (SW8)
PAUSE (SW5)
AC/DC SELECTOR SW10
DC 6V
J102
REMOTE J101-B
FUSE 800mA
VOLTAGE SELECTOR
S0101 AC SOCKET

Figure 23 SCHEMATIC DIAGRAM


FM ROD ANT.
Q1 2SC535(B) FM RF AMP
Q2 2SC461(B) FM MIX
Q3 2SC535(B) FM OSC
Q4 2SC460(C) FM 1st IF
Q5 2SC460(C) FM 2nd IF
Q6 2SC460(B) FM 3rd IF
Q7 2SC460(B) FM 4th IF
Q8 2SC460(B) LW/MW OSC.
Q9 2SC460(C) LW/MW MIX.
Q10 2SC460(C) LW/MW 1st IF
Q11 2SC460(B) LW/MW 2nd IF
Q101 2SC458LG(D) MIC AMP
Q102 2SC458(D) BUFFER
Q103,Q104 2SC458(D) x 2 ALC
Q105 2SC458 LG(D) EQUALIZER AMP
Q106 2SC458(D) EQUALIZER AMP
Q107, Q108 2SC1368(C) AUDIO OUTPUT
Q109 2SC458(D) BUFFER
Q110 2SC458(C) METER AMP.
Q111, Q112 2SC458(D) BIAS OSC
Q113 2SC458(D) MONITOR
Q114 2SA673(B) PAUSE
Q115 2SC458(D) PAUSE
AUDIO AMP.
IC-101
MONITOR SWITCH
TAPE SELECTOR (SW6)
J101-A EXT. MIC.
SO103 REC/PB
E.C.M.
BUILT IN MIC
SW7
REC/PB HEAD
ERASE HEAD
REC MONITOR J101-D
8-ohm EXT SPEAKER J101-C
(SP101) SPEAKER 8 ohm
TUNING/ RECORD LEVEL/ BATTERY CONDITION (ME101)
MAIN SWITCH (SW8)
PAUSE (SW5)
AC/DC SELECTOR SW10
DC 6V
J102
REMOTE J101-B
DIAL LAMP PL101
LIGHT SWITCH (SW9)
PL102 METER LAMP
DC MOTOR
RECORDING INDICATOR
VOLTAGE SELECTOR
SO102
SO101 AC SOCKET
FM TUNING
MW/LW TUNING

NOTES

1) FREQ. RANGE
LW 150~285kHz
MW 520~1620kHz
FM 87.6~108MHz
2) IF LW/MW 455kHz, FM10.7MHz
3) CAPACITANCE VALUES ARE IN MFD P=MMFD
4) RESISTANCE VALUES ARE IN OHM K=1000
5) SW1-A~F: TAPE/RADIO SELECTOR (T;TAPE R;RADIO S;SLEEP) SWITCH AT "TAPE" POSITION.
6) SW2-A~J: REC/P.B. SWITCH AT "P.B". POSITION.
7) SW3-A :RADIO MONITOR SWITCH AT "NORMAL" POSITION.
8) SW3-B~D: BAND SELECTOR SWITCH AT "FM" POSITION. .
9) SW4: RIF SWITCH
10) SW5: PAUSE SWITCH
11) SW6: TAPE SELECTOR SWITCH
12) SW7: BUILT-IN MIC. ON-OFF SWITCH
13) SW8: MAIN SWITCH
14) SW9: LIGHTING SWITCH
15) SW10: AC/DC SELECTOR SWITCH

Figure 23 SCHEMATIC DIAGRAM

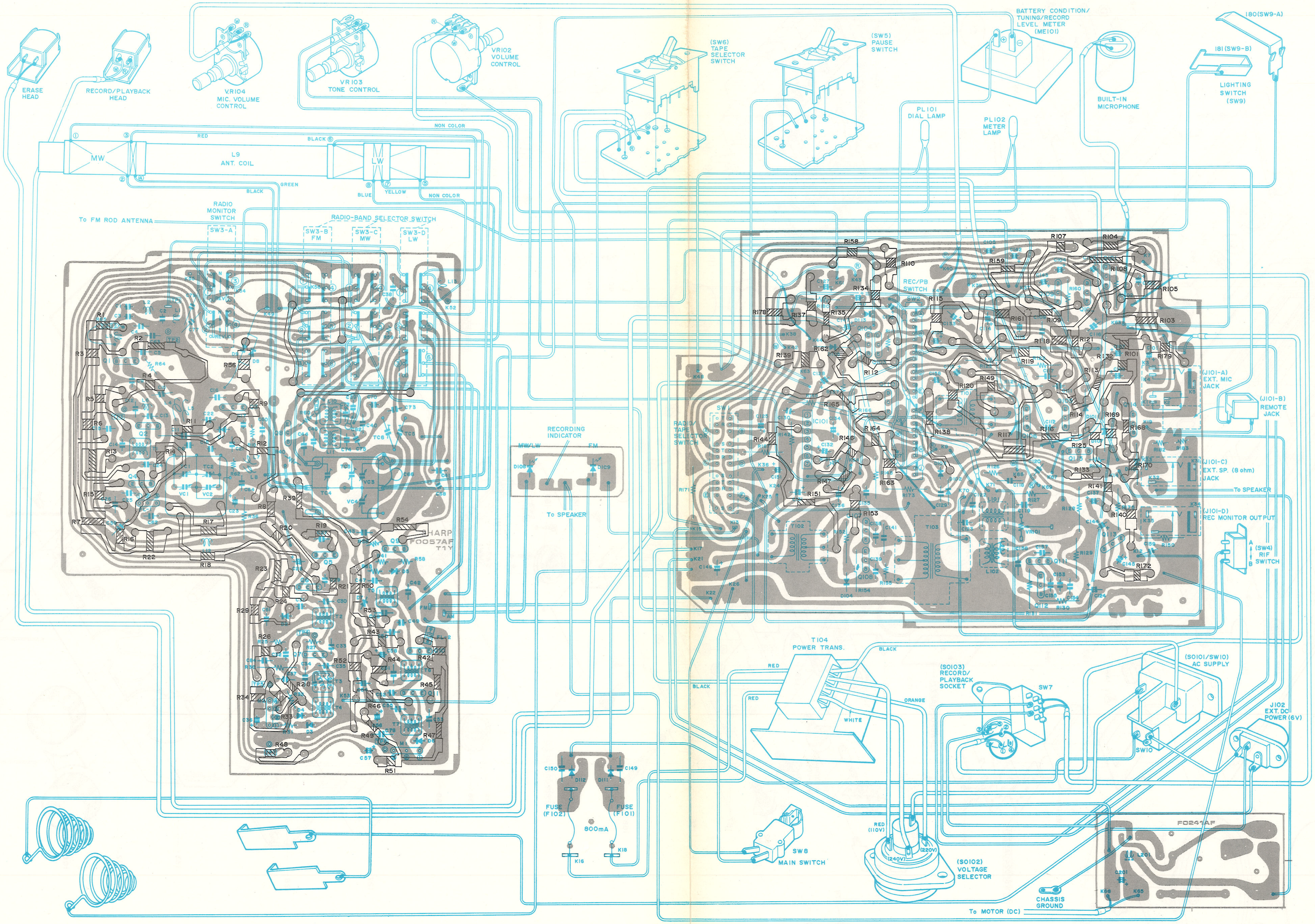

ERASE HEAD
RECORD/PLAYBACK HEAD
VR104 MIC. VOLUME CONTROL
VR103 TONE CONTROL
VR102 VOLUME CONTROL
(SW6) TAPE SELECTOR SWITCH
(SW5) PAUSE SWITCH
BATTERY CONDITION/ TUNING/RECORD LEVEL METER (ME101)
180(SW9-A)
181(SW9-B)
LIGHTING SWITCH (SW9)
BUILT-IN MICROPHONE
PL101 DIAL LAMP
PL102 METER LAMP
MW
L9 ANT. COIL
LW
RED
BLACK
GREEN
BLUE
YELLOW
NON COLOR
RADIO MONITOR SWITCH
To FM ROD ANTENNA
RADIO-BAND SELECTOR SWITCH
SW3-A
SW3-B FM
SW3-C MW
SW3-D LW
RECORDING INDICATOR
MW/LW
FM
To SPEAKER
REC/PB SWITCH
RADIO/TAPE SELECTOR SWITCH
(J101-A) EXT. MIC JACK
(J101-B) REMOTE JACK
(J101-C) EXT. SP. (8 ohm) JACK
To SPEAKER
(J101-D) REC MONITOR OUTPUT
(SW4) RIF SWITCH
SHARP F0057AF
T104 POWER TRANS.
BLACK
RED
ORANGE
WHITE
(SO103) RECORD/ PLAYBACK SOCKET
SW7
(SO101/SW10) AC SUPPLY
SW10
J102 EXT. DC POWER (6V)
C150
C149
D112
D111
FUSE (F102)
FUSE (F101)
800mA
K16
K18
SW8 MAIN SWITCH
RED (110V)
(220V)
(240V)
(SO102) VOLTAGE SELECTOR
CHASSIS GROUND
F0241AF
To MOTOR (DC)

Figure 24 WIRING SIDE OF P.W. BOARD

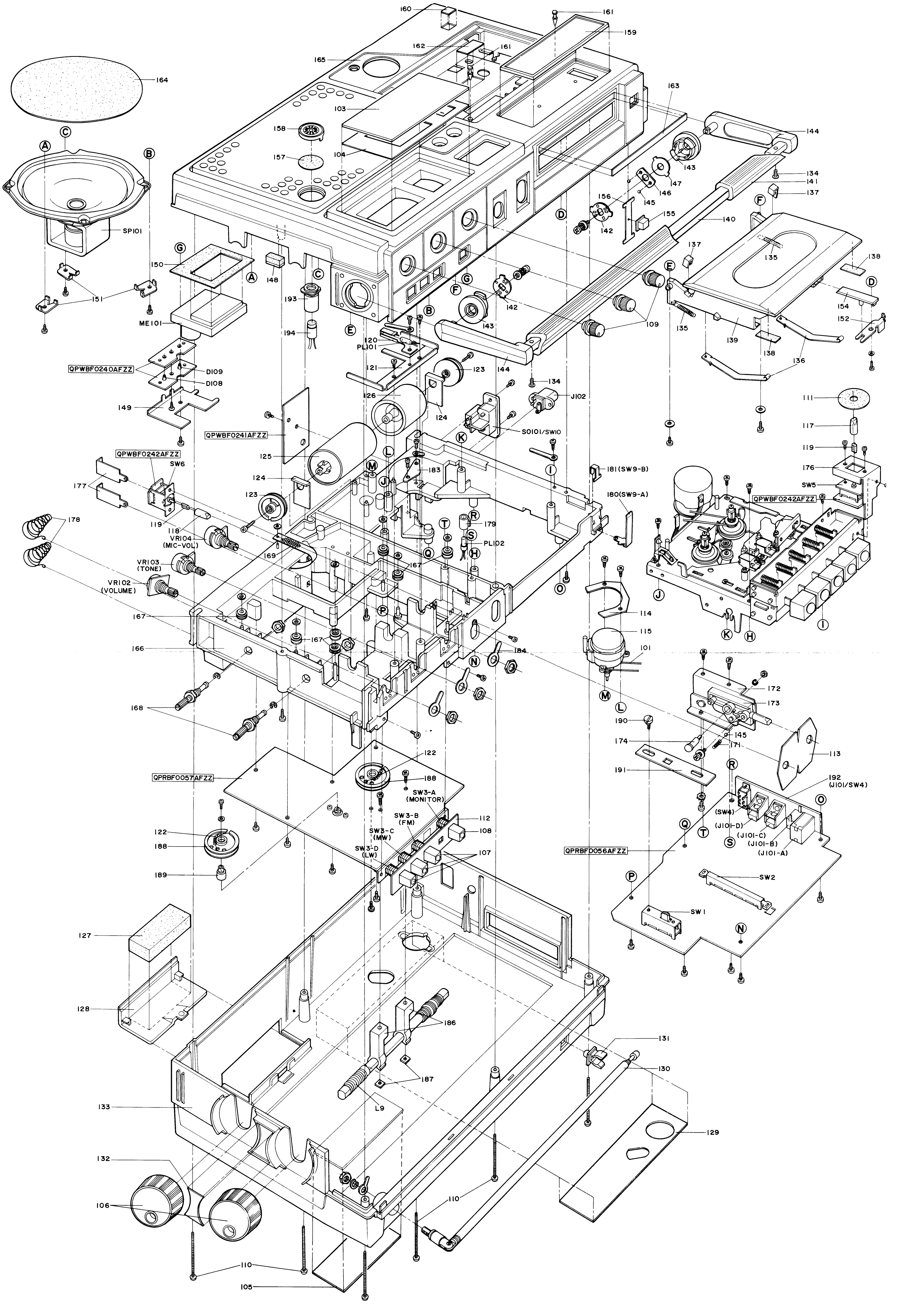

160
161
159
162
161
165
164
163
144
103
158
C
A
B
157
104
143
147
134
141
146
137
145
156
D
155
140
F
142
SP101
137
G
E
138
135
D
150
148
193
C
A
151
ME101
E
B
G
F
142
143
109
135
139
154
152
138
136
120
PL101
144
121
123
QPWBF0240AFZZ
D109
D108
134
J102
111
149
126
124
S0101/SW10
117
QPWBF0241AFZZ
K
119
125
M
L
J
183
I
181(SW9-B)
176
QPWBF0242AFZZ
SW6
124
180(SW9-A)
SW5
QPWBF0242AFZZ
177
178
123
R
179
119
118
VR104
(MIC-VOL)
T
S
PL102
H
169
167
VR103
(TONE)
Q
O
VR102
(VOLUME)
J
114
167
P
115
K
H
I
166
167
184
101
N
M
L
172
173
168
190
145
174
171
113
191
122
QPRBF0057AFZZ
188
SW3-A
(MONITOR)
192
(J101/SW4)
R
112
SW3-B
(FM)
108
(SW4)
O
122
188
SW3-C
(MW)
Q
T
(J101-D)
SW3-D
(LW)
(J101-C)
QPRBF0056AFZZ
S
(J101-B)
(J101-A)
107
189
P
SW2
SW1
127
N
128
186
131
130
187
133
L9
129
132
110
106
110
105

Figure 25 CABINET EXPLODED VIEW (1/2)

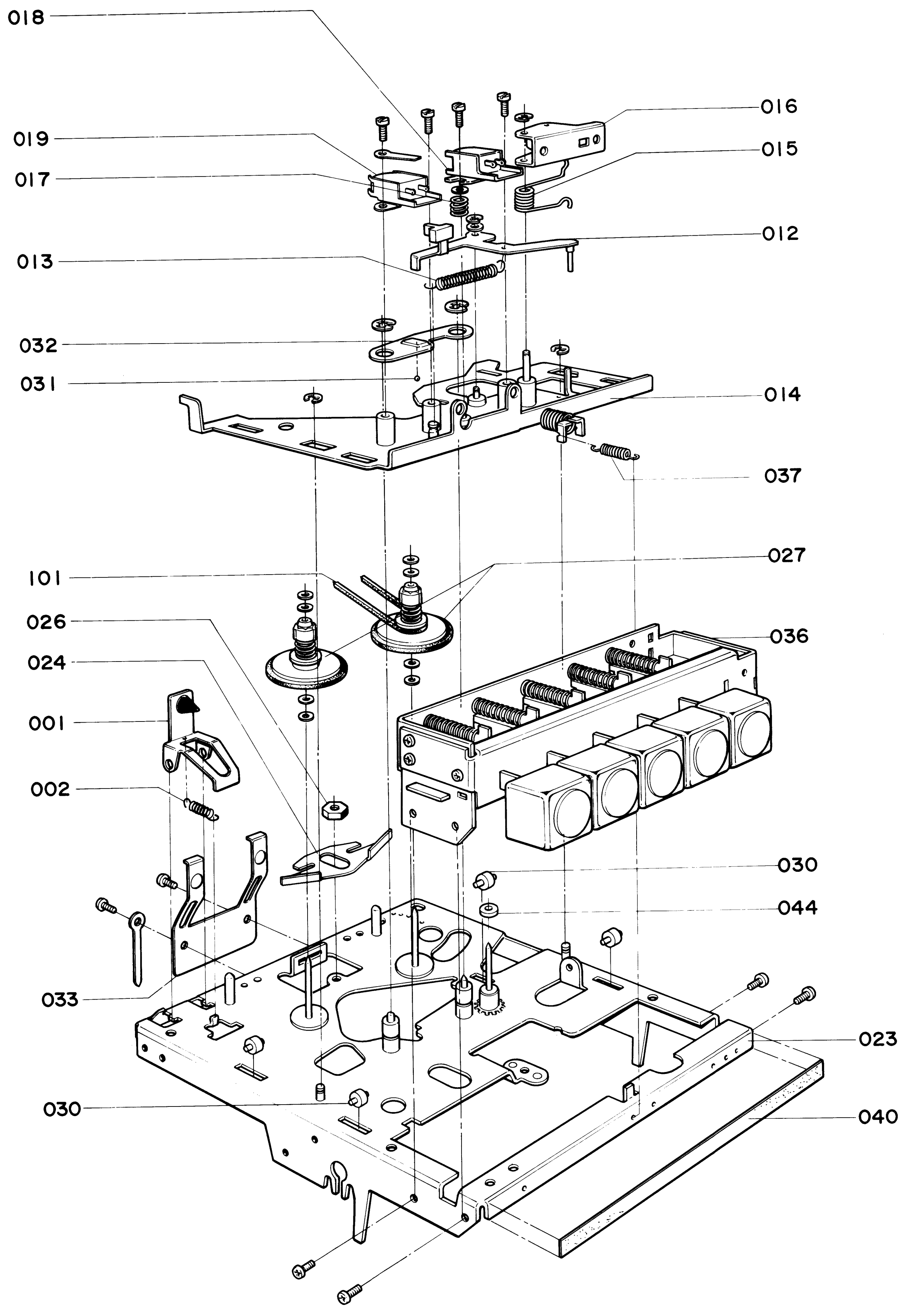

018
019
017
013
032
031
101
026
024
001
002
033
030
016
015
012
014
037
027
036
030
044
023
040

Figure 26 MECHANISM EXPLODED TOP VIEW

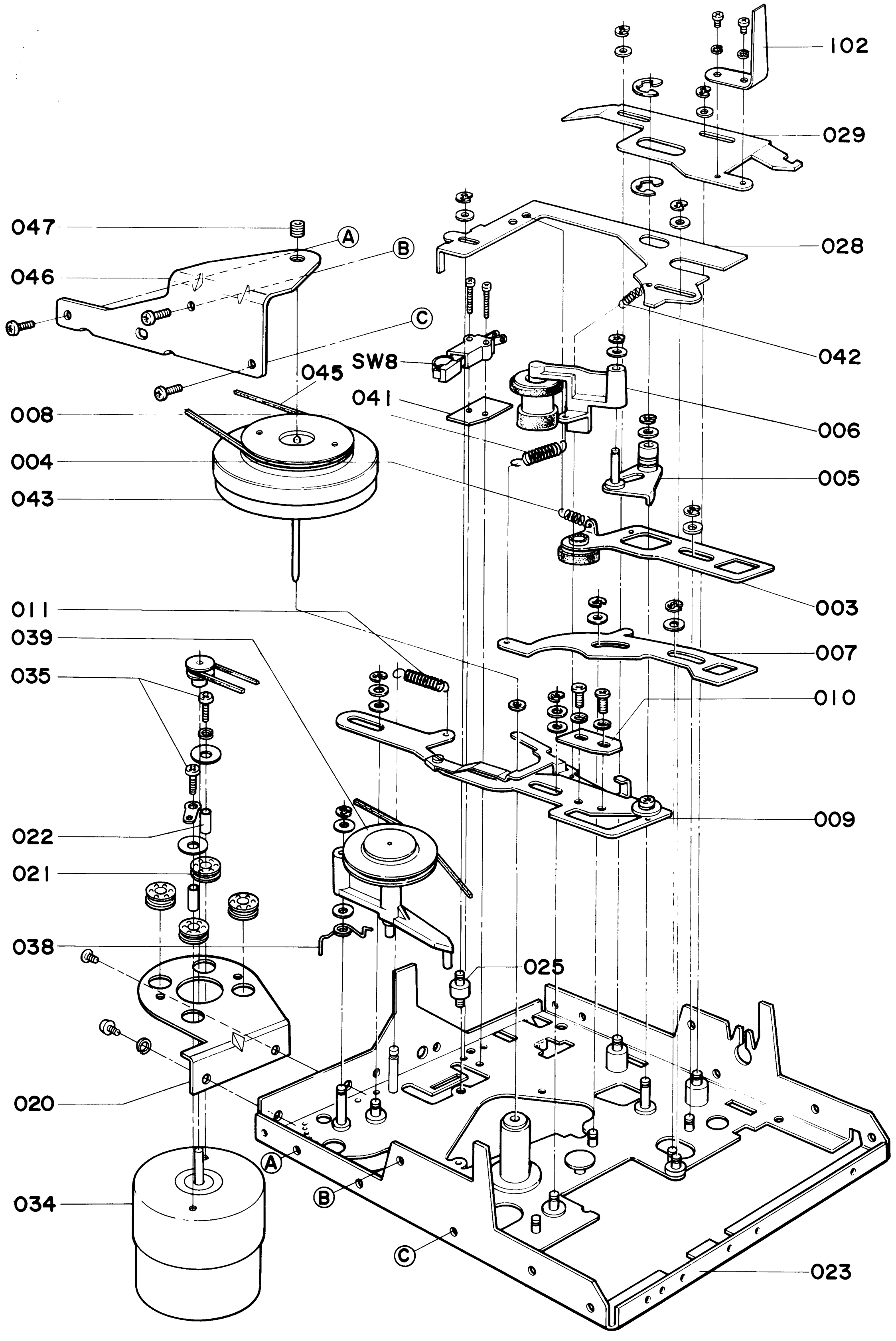

047
046
008
004
043
011
039
035
022
021
038
020
034
102
029
028
042
SW8
045
041
006
005
003
007
010
009
025
023
A
B
C

Figure 27 MECHANISM EXPLODED BOTTOM VIEW

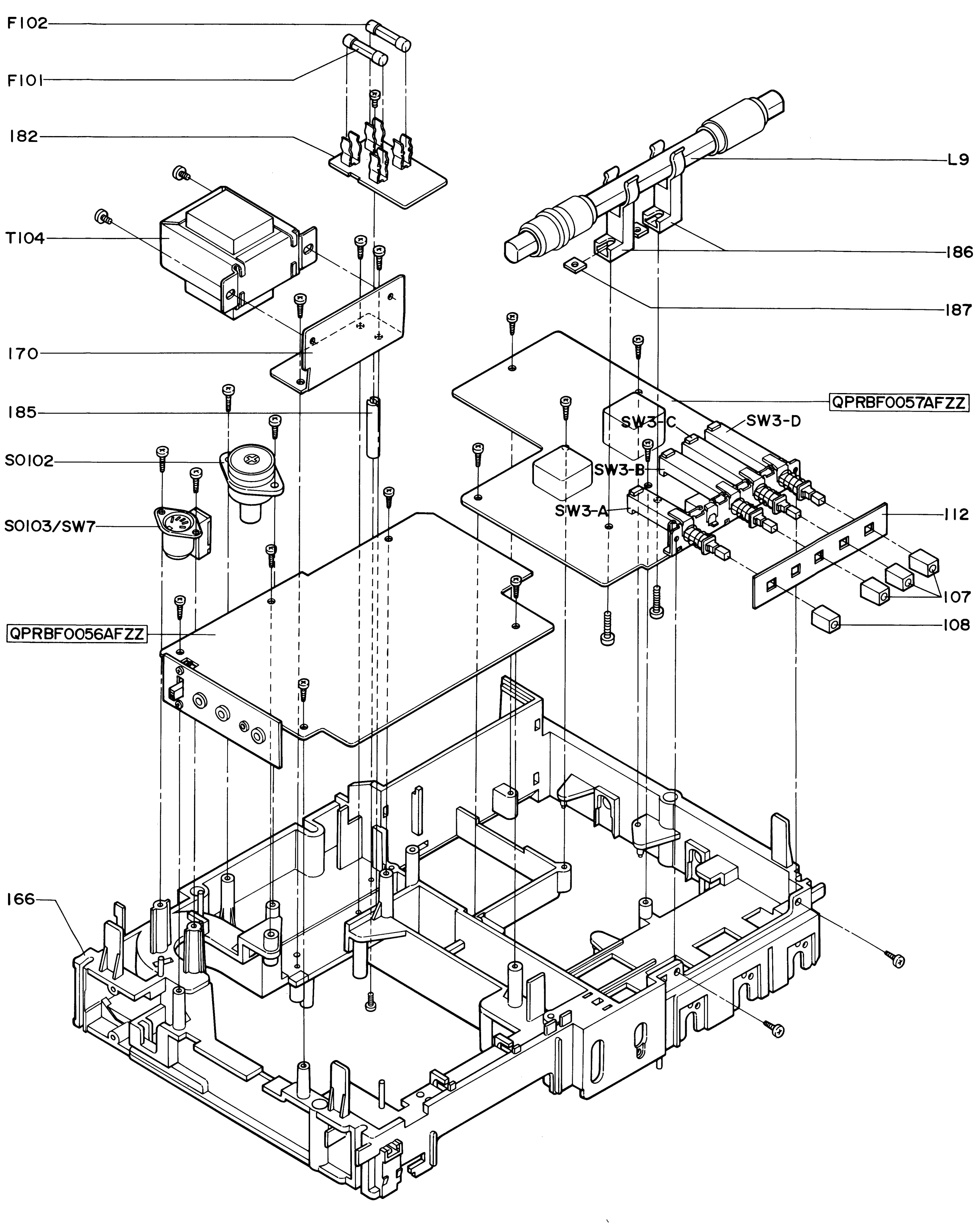


Figure 28 CABINET EXPLODED VIEW (2/2)

MODEL
GF-3000H

SHARP

PARTS LIST

"HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following informations.

1. MODEL NUMBER
2. REF. NO.
3. PART NO.
4. DESCRIPTION

TRANSISTORS

REF. NO.	PART NO.	DESCRIPTION	CODE
Q1	VS2SC535-B/-1	FM RF Amplifier	AG
Q2	VS2SC461-B/-1	FM Mixer	AF
Q3	VS2SC535-B/-1	FM Oscillator	AG
Q4	VS2SC460-C/-1	1st FM IF Amplifier	AF
Q5	VS2SC460-C/-1	2nd FM IF Amplifier	AF
Q6	VS2SC460-B/-1	3rd FM IF Amplifier	AF
Q7	VS2SC460-B/-1	4th FM IF Amplifier	AF
Q8	VS2SC460-B/-1	LW/MW Oscillator	AF
Q9	VS2SC460-C/-1	LW/MW Mixer	AF
Q10	VS2SC460-C/-1	1st LW/MW IF Amplifier	AF
Q11	VS2SC460-B/-1	2nd LW/MW IF Amplifier	AF
Q101	VS2SC458LGD-1	MIC. Amplifier	AF
Q102	VS2SC458-D/-1	Buffer	AF
Q103	VS2SC458-D/-1	ALC Amplifier	AF
Q104	VS2SC458-D/-1	ALC Amplifier	AF
Q105	VS2SC458LGD-1	Equalizer Amplifier	AF
Q106	VS2SC458-D/-1	Equalizer Amplifier	AF
Q107	VS2SC1368-C-3	Audio Output (Matched Pair)	AF
Q108	VS2SC1368-C-3	Audio Output (Matched Pair)	AF
Q109	VS2SC458-D/-1	Buffer	AF
Q110	VS2SC458-C/-1	Meter Amplifier	AF
Q111	VS2SC458-D/-1	Bias Oscillation	AF
Q112	VS2SC458-D/-1	Bias Oscillation	AF
Q113	VS2SC458-D/-1	Monitor (Reverse)	AF
Q114	VS2SA673-B/-1	Pause	AG
Q115	VS2SC458-D/-1	Pause	AF

INTEGRATED CIRCUIT

REF. NO.	PART NO.	DESCRIPTION	CODE
IC101	RH-IX0934AFZZ	Audio Amplifier	AH

DIODES

REF. NO.	PART NO.	DESCRIPTION	CODE
D1	VHC1S2790-Y-1	FM AFC	AD
D2	VHD1N60////-1	Meter	AC
D3	VHD1N60////-3	FM Detector (Matched Pair)	AH
D4	VHD1N60////-3	FM Detector (Matched Pair)	AH
D5	VHD1N34A///-1	LW/MW Overload	AC
D6	VHD1N34A///-1	LW/MW Detector	AC
D7	VHVHV46-G//-1	Bias Stabilizer	AD
D8	VHD1S2076//-1	Static Protector	AG
D9	VHD1S2076//-1	Static Protector	AG
D101	VHD1N34A///-1	ALC	AC
D102	VHD1N34A///-1	Record Meter	AC
D103	VHD1N34A///-1	Record Meter	AC
D104	VHV1S1210-M1F	Thermal Compensation	AC
D105	VHE1S994-K/1F	Voltage Stabilizer	AF
D107	VHD1S2076//-1	Pause	AG
D108	VHPGL-30PR/1F	Light Emitting Diode, MW/LW	AE
D109	VHPGL-30PR/1F	Light Emitting Diode, FM	AE
D110	VHE1S994-K/1F	Pause	AF
D111	RH-DX0029AGZZ	Rectifier, Power	AC
D112	RH-DX0029AGZZ	Rectifier, Power	AC
D113	VHD1S2076//-1	Pause	AG

COILS

REF. NO.	PART NO.	DESCRIPTION	CODE
L1	RCILC0018AFZZ	Trap	AA
L2	RCILC0019AFZZ	FM Antenna	AA
L3	RCILC0018AFZZ	Choke	AA
L4	RCILR0089AFZZ	FM RF	AA
L5	RCILR0089AFZZ	FM RF	AA
L6	RCILC0030AFZZ	FM Emitter Choke	AC
L7	RCILR0089AFZZ	FM Oscillator	AA
L8	RCILR0089AFZZ	FM Oscillator	AA
L9	RCILA0353AFLA	LW/MW Antenna	AK
L10	RCILB0292AFZZ	MW Oscillator	AD
L11	RCILB0353AFZZ	LW Oscillator	AD
L12	RCILF0014AGZZ	RF Choke	AC
L13	RCILF0014AGZZ	Choke	AC
L101	RCILB0087AGZZ	Bias Step-up	AF
L102	RCILB0352AFZZ	Bias Oscillation	AE
L201	RCILF0014AGZZ	Choke (Noise)	AC

FILTERS

REF. NO.	PART NO.	DESCRIPTION	CODE
FL1	RFILF0009AFZZ	10.7 MHZ, 2nd IF	AE
FL2	RFILA0001AFZZ	455kHz	AE

TRANSFORMERS

REF. NO.	PART NO.	DESCRIPTION	CODE
T1	RCILI0157AFZZ	1st FM IF	AE
T2	RCILI0157AFZZ	3rd FM IF	AE
T3	RCILI0183AFZZ	4th FM IF	AE
T4	RCILI0182AFZZ	FM Discriminator	AE
T5	RCILI0154AFZZ	1st LW/MW IF	AD
T6	RCILI0179AFZZ	2nd LW/MW IF	AD
T7	RCILI0170AFZZ	3rd LW/MW IF	AD
T101	RTRNI0065AFZZ	Record	AF
T102	RTRNI0065AFZZ	Driver (Input)	AF
T103	RTRNS0895AFZZ	Output	AH
T104	RTRNP0365AFZZ	Power	AU

PACKAGED CIRCUITS

REF. NO.	PART NO.	DESCRIPTION	CODE
M1	RMPTA0011AFZZ	470 ohm + .02MFD x 2	AC
M2	RMPTA0084AFZZ	4.7K ohm x 2 + 330PF x 3	AC

CONTROLS

REF. NO.	PART NO.	DESCRIPTION	CODE
VC1, VC2, TC1, TC2	RVC-Q0001AFZZ	Variable Capacitors, Tuning with Trimmers TC1: FM RF Trimmer TC2: FM Oscillator Trimmer	AL
VC3, VC4, TC3, TC4	RVC-P0050AFZZ	Variable Capacitors, Tuning with Trimmers TC3: MW Antenna Trimmer TC4: MW Oscillator Trimmer	AN
TC5, TC6	RTO-H2033AGZZ	Trimmer Capacitor TC5: LW Antenna Trimmer TC6: LW Oscillator Trimmer	AE
VR101	RVR-M0100AFZZ	2K ohm, Bias Current Adjust	AC
VR102	RVR-A0041AFZZ	10K ohm, Volume Control	AF
VR103	RVR-A0019AFZZ	10K ohm, Tone Control	AE
VR104	RVR-A0019AFZZ	10K ohm, Microphone Volume	AE

CAPACITORS

(Unless otherwise specified capacitors are 50V, ±20%, Mylar Type)

REF. NO.	PART NO.	DESCRIPTION	CODE
C1	VCCSPU1HL100F	10PF, 50V, ±1PF, Ceramic	AA
C2	VCCSPU1HL3R0C	3PF, 50V, ±0.25PF, Ceramic	AA
C3	VCCSPU1HL5R0C	5PF, 50V, ±0.25PF, Ceramic	AA
C4	VCKZPU1HF222Z	.0022MFD, 50V, +80–20%, Ceramic	AA
C5	VCKZPU1HF222Z	.0022MFD, 50V, +80–20%, Ceramic	AA
C8	VCCSPU1HL220J	22PF, 50V, ±5%, Ceramic	AA
C9	VCCSPU1HL100F	10PF, 50V, ±1PF, Ceramic	AA
C10	VCKZPU1HF103Z	.01MFD, 50V, +80–20%, Ceramic	AA
C11	VCCCPU1HJ2R0C	2PF, 50V, ±0.25PF, Ceramic	AB
C12	VCCSBU1HL101J	100PF, 50V, ±5%, Ceramic	AA
C13	VCQYKU1HM103M	.01MFD	AB
C14	VCQYKU1HM103M	.01MFD	AB
C15	VCQYKU1HM103M	.01MFD	AB
C16	VCQYKU1HM103M	.01MFD	AB
C17	VCCCPU1HH220J	22PF, 50V, ±5%, Ceramic	AB
C18	VCCUPU1HJ2R0C	2PF, 50V, ±0.25PF, Ceramic	AA
C21	VCCUPU1HJ220J	22PF, 50V, ±5%, Ceramic	AB
C22	VCQYKU1HM103M	.01MFD	AB
C24	VCQYKU1HM222M	.0022MFD	AB
C25	VCQYKU1HM103M	.01MFD	AB
C26	VCQYKU1HM103M	.01MFD	AB
C27	VCQYKU1HM103M	.01MFD	AB
C29	VCQYKU1HM103M	.01MFD	AB
C30	VCQYKU1HM103M	.01MFD	AB
C31	VCCSPU1HL5R0C	5PF, 50V, ±0.25PF, Ceramic	AA
C32	VCQYKU1HM103M	.01MFD	AB
C33	VCQYKU1HM103M	.01MFD	AB
C34	VCCSPU1HL1R0C	1PF, 50V, ±0.25PF, Ceramic	AA
C35	VCQYKU1HM103M	.01MFD	AB
C37	VCQYKU1HM333M	.033MFD	AB
C38	VCKSPU2GL221M	220PF, 400V, ±20%, Ceramic	AD
C39	VCQYKU1HM223M	.022MFD	AB
C40	VCQYKU1HM473M	.047MFD	AC
C41	VCQYKU1HM103M	.01MFD	AB
C42	VCQYKU1HM223M	.022MFD	AB
C43	VCQYKU1HM333M	.033MFD	AB
C44	VCQYKU1HM103M	.01MFD	AB
C45	VCQYKU1HM103M	.01MFD	AB
C47	VCKZPU1HF223Z	.022MFD, 50V, +80–20%, Ceramic	AA
C48	VCKZPU1HF223Z	.022MFD, 50V, +80–20%, Ceramic	AA
C49	VCCSPU1HLR50C	.5PF, 50V, ±0.25PF, Ceramic	AB
C50	VCKZPU1HF223Z	.022MFD, 50V, +80–20%, Ceramic	AA
C51	VCKZPU1HF223Z	.022MFD, 50V, +80–20%, Ceramic	AA
C52	VCCSPU1HL2R0D	2PF, 50V, ±0.5PF, Ceramic	AA
C53	VCKZPU1HF223Z	.022MFD, 50V, +80–20%, Ceramic	AA
C55	VCKZPU1HF223Z	.022MFD, 50V, +80–20%, Ceramic	AA
C59	VCQYKU1HM103M	.01MFD	AB
C60	VCQYKU1HM103M	.01MFD	AB
C61	VCQYKU1HM103M	.01MFD	AB
C62	VCQYKU1HM103M	.01MFD	AB
C63	VCKYPU1HB222M	.0022MFD, 50V, ±20%, Ceramic	AA
C64	VCKZPU1HF103Z	.01MFD, 50V, +80–20%, Ceramic	AA
C66	VCCSPU1HL3R0C	3PF, 50V, ±0.25PF, Ceramic	AA
C68	VCCSBU1HL560J	56PF, 50V, ±5%, Ceramic	AA
C70	VCQSMT1HS271J	270PF, 50V, ±5%, Styrol	AB
C72	VCCCPU1HJ1R0C	1PF, 50V, ±0.25PF, Ceramic	AB
C73	VCQSMT1HS221J	220PF, 50V, ±5%, Styrol	AB
C74	VCCSPU1HL270J	27PF, 50V, ±5%, Ceramic	AA
C75	VCQSMT1HS151J	150PF, 50V, ±5%, Styrol	AB
C77	VCKZPU1HF103Z	.01MFD, 50V, +80–20%, Ceramic	AA
C78	VCQYKU1HM103M	.01MFD	AB
C79	VCKZPU1HF103Z	.01MFD, 50V, +80–20%, Ceramic	AA
C82	VCQYKU1HM472M	.0047MFD	AB
C84	VCKZPU1HF103Z	.01MFD, 50V, +80–20%, Ceramic	AA
C109	VCCSBU1HL471J	470PF, 50V, ±5%, Ceramic	AA
C111	VCQYKU1HM102K	.001MFD, 50V, ±10%, Mylar	AB
C112	VCCSBU1HL121J	120PF, 50V, ±5%, Ceramic	AA
C117	VCQYKU1HM683M	.068MFD	AC
C118	VCCSBU1HL681J	680PF, 50V, ±5%, Ceramic	AA
C119	VCQYKU1HM102K	.001MFD, 50V, ±10%, Mylar	AB
C120	VCQYKU1HM102K	.001MFD, 50V, ±10%, Mylar	AB
C122	VCQYKU1HM183J	.018MFD, 50V, ±5%, Mylar	AC
C123	VCQYKU1HM223K	.022MFD, 50V, ±10%, Mylar	AB
C129	VCQYKU1HM682M	.0068MFD	AB
C130	VCQYKU1HM222M	.0022MFD	AB
C135	VCQYKU1HM472M	.0047MFD	AB
C138	VCQYKU1HM103M	.01MFD	AB
C139	VCQYKU1HM103M	.01MFD	AB
C141	VCKZPU1HF104Z	.1MFD, 50V, +80–20%, Ceramic	AC
C149	VCKZPU1EF104Z	.1MFD, 25V +80–20%, Ceramic	AC
C150	VCKZPU1EF104Z	.1MFD, 25V, +80–20%, Ceramic	AC
C153	VCQYKU1HM682K	.0068MFD, 50V, ±10%, Mylar	AB
C154	VCQYKU1HM103M	.01MFD	AB
C155	VCQYKU1HM682K	.0068MFD, 50V, ±10%, Mylar	AB
C156	VCQYKU1HM473M	.047MFD	AC
C157	VCQYKU1HM103M	.01MFD	AB

CAPACITORS

REF. NO.	PART NO.	DESCRIPTION	CODE
C159	VCKZPU1HF102Z	.001MFD, 50V, +80–20%, Ceramic	AA

ELECTROLYTIC CAPACITORS

(Unless otherwise specified capacitors are 16V, +100–10%, Electrolytic Type)

REF. NO.	PART NO.	DESCRIPTION	CODE
C23	VCAAKU0XA104M	.1MFD, 6.3V, ±20%, Aluminum	AD
C28	VCEAAU1AW107Q	100MFD, 10V, +100–10%	AC
C36	VCEAAU1CW106Q	10MFD	AD
C54	VCEAAU1AW227Q	220MFD, 10V, +100–10%	AD
C56	VCEAAU1CW106Q	10MFD	AD
C57	VCEALU1HW104M	.1MFD, 50V, ±20%	AB
C58	VCEAAU0JW476Q	47MFD, 6.3V, +100–10%	AC
C101	VCEAAU1CW106Q	10MFD	AD
C102	VCEAAU1CW106Q	10MFD	AD
C103	VCEAAU1CW106Q	10MFD	AD
C104	VCEAAU1CW106Q	10MFD	AD
C105	VCEAAU1CW106Q	10MFD	AD
C106	VCEAAU1HW105R	1MFD, 50V, +150–10%	AB
C107	VCEABU1EW335M	3.3MFD, 25V, ±20%	AC
C108	VCEAAU0JW476Q	47MFD, 6.3V, +100–10%	AC
C113	VCEAAU1AW336Q	33MFD, 10V, +100–10%	AC
C114	VCEAAU1AW107Q	100MFD, 10V, +100–10%	AC
C115	VCEAAU1AW336Q	33MFD, 10V, +100–10%	AC
C116	VCEAAU1AW227Q	220MFD, 10V, +100–10%	AD
C124	VCEAAU1AW227Q	220MFD, 10V, +100–10%	AD
C125	VCEAAU1EW335R	3.3MFD, 25V, +150–10%	AB
C127	VCEALU1HW224M	.22MFD, 50V, ±20%	AB
C128	VCEAAU1CW106Q	10MFD	AD
C131	VCEAAU1AW227Q	220MFD, 10V, +100–10%	AD
C132	VCEALU1HW224M	.22MFD, 50V, ±20%	AB
C133	VCEAAU1AW477Q	470MFD, 10V, +100–10%	AE
C134	VCEAAU0JW337Q	330MFD, 6.3V, +100–10%	AD
C136	VCEAAU1AW477Q	470MFD, 10V, +100–10%	AE
C137	VCEAAU1CW106Q	10MFD	AD
C140	VCEAAU1AW107Q	100MFD, 10V, +100–10%	AC
C142	VCEAAU1CW106Q	10MFD	AD
C143	VCEAAU1CW106Q	10MFD	AD
C144	VCEAAU1AW107Q	100MFD, 10V, +100–10%	AC
C145	VCEAAU0JW476Q	47MFD, 6.3V, +100–10%	AC
C147	VCEAAU1AW227Q	220MFD, 10V, +100–10%	AD
C148	VCEAAU1AW108Q	1000MFD, 10V, +100–10%	AE
C151	VCEAAU1HW105R	1MFD, 50V, +150–10%	AB
C152	VCEAAU1HW105R	1MFD, 50V, +150–10%	AB
C158	VCEAAU0JW476Q	47MFD, 6.3V, +100–10%	AC
C201	VCEAAU1AW227Q	220MFD, 10V, +100–10%	AD

RESISTORS

(Unless otherwise specified capacitors are 1/4W, ±10%, Carbon type)

REF. NO.	PART NO.	DESCRIPTION	CODE
R10	VRD-SU2EY470K	47 ohm	AA
R25	VRD-SU2EY472K	4.7K ohm	AA
R27	VRD-SU2EY101K	100 ohm	AA
R30	VRD-ST2EY221K	220 ohm	AA
R31	VRD-SU2EY102K	1K ohm	AA
R32	VRD-SU2EY102K	1K ohm	AA
R36	VRD-ST2EY105K	1 Meg ohm	AA
R38	VRD-SU2EY102K	1K ohm	AA
R40	VRD-SU2EY471K	470 ohm	AA
R41	VRD-SU2EY181K	180 ohm	AA
R58	VRD-SU2EY332K	3.3K ohm	AA
R59	VRD-SU2EY101K	100 ohm	AA
R60	VRD-SU2EY471K	470 ohm	AA
R62	VRD-SU2EY152K	1.5K ohm	AA
R63	VRD-SU2EY333K	33K ohm	AA
R64	VRD-SU2EY101K	100 ohm	AA
R65	VRD-SU2EY152K	1.5K ohm	AA
R67	VRD-ST2EY561K	560 ohm	AA
R102	VRD-ST2EY474K	470K ohm	AA
R111	VRD-SU2EY153K	15K ohm	AA
R122	VRD-ST2EY153K	15K ohm	AA
R123	VRD-ST2EY222K	2.2K ohm	AA
R124	VRD-ST2EY333K	33K ohm	AA
R126	VRD-SU2EY393K	39K ohm	AA
R127	VRD-ST2EY473K	47K ohm	AA
R128	VRD-ST2EY100K	10 ohm	AA
R129	VRD-ST2EY823K	82K ohm	AA
R130	VRD-ST2EY823K	82K ohm	AA
R131	VRD-ST2EY220K	22 ohm	AA
R142	VRD-ST2EY330K	33 ohm	AA
R145	VRD-ST2EY2R2K	2.2 ohm	AA
R148	VRD-ST2EY470K	47 ohm	AA
R150	VRD-ST2EY680K	68 ohm	AA
R152	VRD-ST2EY330K	33 ohm	AA
R154	VRD-ST2EY1R0K	1 ohm	AA
R155	VRD-SU2EY330K	33 ohm	AA
R157	VRD-ST2EY680K	68 ohm	AA
R160	VRD-ST2EY474K	470K ohm	AA
R166	VRD-ST2EY563K	56K ohm	AA
R167	VRD-ST2EY183K	18K ohm	AA
R171	VRD-ST2HA100K	10 ohm, 1/2W, ±10%, Carbon	AA
R173	VRD-ST2EY561K	560 ohm	AA
R175	VRD-ST2EY101K	100 ohm	AA
R180	VRD-ST2EY103K	10K ohm	AA
R181	VRD-SU2EY271K	270 ohm	AA
R182	VRD-SU2EY820K	82 ohm	AA
R183	VRD-SU2EY390K	39 ohm	AA
R184	VRD-SU2EY683K	68K ohm	AA

MECHANICAL PARTS

REF. NO.	PART NO.	DESCRIPTION	CODE
001	MLEVF0308AGFD	Lever, Erase Proof	AD
002	MSPRT0161AGFJ	Spring, Erase Proof Lever	AA
003	DROLR0010AGZZ	Rewind Roller Assembly	AK
004	MSPRT0105AGFJ	Spring, Rewind Roller Lever	AB
005	MLEVF0270AGZZ	Lever, Fast Forward Roller Assembly	AE
006	NROLP0031AGZZ	Fast Forward Roller Assembly	AK
007	MLEVF0447AGFD	Lever, Fast Forward	AC
008	MSPRT0104AGFJ	Spring, Fast Forward Roller Lever	AA
009	MLEVF0428AGZZ	Stop Lever Assembly	AG
010	PAJS-0005AGFD	Adjusting Plate, Auto Stop	AA
011	MSPRT0136AGFJ	Spring, Auto Stop Lever	AA
012	MLEVF0275AGZZ	Tape Arm Assembly	AE
013	MSPRT0137AGFJ	Spring, Tape Arm	AA
014	LCHSS0061AGZZ	Sub Chassis Assembly	AL
015	MSPRT0102AGFJ	Spring, Pinch Roller Lever	AB
016	DROLP0016AGZZ	Pinch Roller Assembly	AF
017	MSPRC0031AGMN	Spring, R/P Head Adjust	AA
018	RHEDG0014AGZZ	Head, Record/Playback	AP
019	RHEDA0052AFZZ	Head, Erase	AN
020	LANGR0070AGFD	Bracket, Motor	AC
021	LBSHS0001AG00	Cushion, Motor, Rubber	AA
022	PSPAA0001AGFJ	Spacer, Motor	AB
023	LCHSM0155AGZZ	Mechanism Chassis Assembly	AW
024	MLEVF0457AGFD	Lever, Brake	AB
025	LX-BZ0091AGFD	Guide Shaft, Operation Lever	AB
026	LX-NZ0012AGFD	Nut, Brake Lever	AB

REF. NO.	PART NO.	DESCRIPTION	CODE
027	NDAIR0053AGSA	Turntable, Take-up and Supply	AF
028	MLEVF0460AGFD	Lever, Operation	AC
029	MLEVF0456AGFD	Lever, Record connecting	AC
030	NROLM0008AGZZ	Roller, Sub Chassis Slide	AB
031	NBALS0004AGFJ	Ball, Sub Chassis, 3φ	AA
032	MSPRP0062AGFJ	Plate Spring, 3φ Ball Hold	AB
033	MSPRP0098AGFW	Spring, Cassette Retaining	AC
034	RMOTM0051AFZZ	Motor	AX
035	LX-BZ0148AGFD	Screw, Motor Retaining	AA
036	DBOTN0045AGSA	Function Selector Button Assembly	AT
037	MSPRT0131AGFJ	Spring, Sub Chassis Return	AA
038	MSPRD0035AGFJ	Spring, Slip Roller Lever	AB
039	NPLYR0023AGZZ	Slip Roller Assembly	AK
040	PFLT-0151AG00	Felt, Chassis Masking	AA
041	PZETF0029AGZZ	Insulator, Main Switch	AA
042	MSPRT0267AGFW	Spring, Auto Stop Lever	AA
043	NFLYC0050AFZZ	Flywheel Assembly	AT
044	PCOVM1005AGFA	Washer, Capstan Oil Cut	AA
045	NBLTK0026AG00	Belt, Capstan Drive	AE
046	LANGF0206AGFD	Bracket, Flywheel	AD
047	LX-BZ0107AGZZ	Screw, Flywheel Thrust Adjust	AB

MISCELLANEOUS

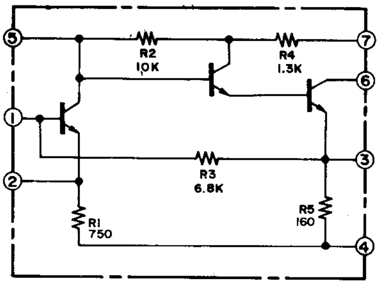
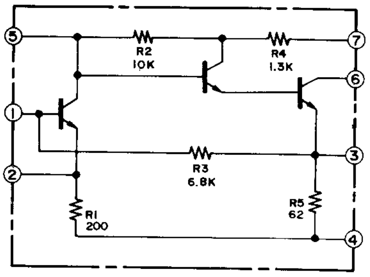
REF. NO.	PART NO.	DESCRIPTION	CODE
101	NBLTK0050AG00	Belt, Time Counter	AD
102	MSPRP0097AGFW	Plate Spring, Record Lever	AC
103	HPNLD1156AFSA	Panel, Tuning Dial Window	AF
104	PTPEH0100AFZZ	Sticking Sheet, Dial Panel	AC
105	HINDM0986AFSA	Indication Metal, Model Spec.	AC
106	JKNBN0228AFSA	Knob, Tuning	AC
107	JKNBM0148AFSC	Knob, Band Selector Switch	AD
108	JKNBM0148AFSD	Knob, Monitor Switch	AD
109	JKNBN0227AFSA	Knob, Volume and Tone	AC
110	XBPSB30P50000	Screw, 3φ x 50mm, Black	AA
111	PCOVM8050AF00	Mask, Pause Switch	AB
112	PCOVM8015AF00	Mask, Band Selector/Monitor Switch	AC
113	PCOVM8014AF00	Mask, Tape/Radio/Sleep Switch, Tape Selector Switch	AD
114	LANGT0115AFFW	Bracket, Time Counter	AB
115	KCOUB0036AGZZ	Time Counter	AS
117	JKNBM0160AFSB	Knob, Pause Switch	AB
118	JKNBM0160AFSA	Knob, Tape Selector Switch	AB
119	PCAPH0001AGZZ	Cap, Pause and Tape Selector Knob	AA
120	LANGT0117AFFW	Holder, Dial Lamp	AC
121	LANGK0055AFFW	Bracket, Tuning Dial	AC
122	MSPRC0011AFZZ	Spring, Dial Cord	AA
123	NDRM-0078AFZZ	Drum, Tuning Dial	AB
124	PSPAJ0010AF00	Spacer, Tuning Dial	AB
125	HDALP0314AFSA	Dial, AM Tuning	AK
126	HDALP0313AFSA	Dial, FM Tuning	AK
127	PCUSU0153AF08	Cushion, Battery, Compartment Lid	AA
128	GFTAB1091AFSA	Lid, Battery Compartment	AE
129	HINDM0987AFSA	Indication Metal, Voltage Selector	AD
130	QANTR0048AFZZ	Rod Antenna	AR
131	LHLDA1034AFSA	Holder, Rod Antenna	AB
132	HINDM0985AFSA	Indication Metal, Tuning	AA

REF. NO.	PART NO.	DESCRIPTION	CODE
133	GCABB0376AFSA	Cabinet, Back	AT
134	XBNSB30P08000	Screw, 3φ x 8mm, Black	AA
135	MSPRT0172AGFW	Spring, Cassette Holder Up	AB
136	MSPRP0082AGFW	Plate Spring, Cassette Holder	AB
137	PGUMM0055AG00	Rubber, Cassette Holder Cushion	AA
138	PFLT-0130AG00	Felt, Cassette Holder	AA
139	GFTAC1050AFSA	Holder, Cassette	AN
140	LANGF0048AFFW	Metal Fittings, Handle	AB
141	JHNDP1028AFSA	Handle, Plastic	AH
142	LANGG0010AFFW	Plate, Handle	AB
143	LHLDL1012AF00	Holder, Handle	AC
144	JHNDM1050AFSA	Handle, Diecasting	AL
145	NBALS0001AFZZ	Ball, Handle, Tape/Radio/Sleep Switch Knob	AA
146	LHLDZ1043AFFW	Holder, Handle Ball	AA
147	MSPRP0058AFFW	Plate Spring, Handle	AB
148	PGUMM0003AF00	Rubber, Lead Wire Retaining	AA
149	LANGK0057AFFW	Bracket, Meter	AB
150	PCUSU0200AFZZ	Cushion, Meter	AA
151	LANGS0021AFFW	Bracket, Speaker	AB
152	MLEVF0013AFFW	Lever, Cassette Holder	AB
153	MSPRT0107AGFJ	Spring, Cassette Holder Lever	AA
154	GLOK-0008AG00	Lever, Cassette Holder Lock	AB
155	JKNBZ0052AFSA	Knob, Dial Lamp Switch	AC
156	MSPRP0062AFFW	Plate Spring, Dial Lamp Switch	AA
157	PCUSU0168AF00	Sponge, Built in Mic Cushion	AA
158	HDECA0231AFSA	Decoration, Built in Mic	AF
159	HBDGD3051AFSA	Badge, Cabinet Front	AK
160	HINDM0465AFSA	Indication Metal, "SHARP"	AA
161	PCUSG0018AF00	Rubber, Cassette Holder Cushion	AB
162	HDECZ0004AGZZ	Decoration, Cassette Compartment	AA
163	HINDM0642AFSA	Indication Metal, Mechanism Pushbutton	AB
164	PFLT-0141AF08	Felt, Speaker	AB
165	GCABA0406AFSA	Cabinet, Front	AX
166	LHLDF1156AFZZ	Frame, Plastic	AS
167	NPLYB0001AFZZ	Pulley, Dial Cord Drive	AB
168	NSFTD0101AFFW	Drive Shaft, Dial Cord	AE
169	PTPEC0013AF00	Ribbon, Battery Removing	AA
170	LANGR0362AFFW	Bracket, Power Transformer	AC
171	MSPRC0061AFFW	Spring, Tape/Radio/Sleep Switch Knob	AA
172	LANGK0056AFFW	Bracket, Tape/Radio/Sleep Switch Knob	AF
173	JKNBZ0051AFSA	Knob, Tape/Radio/Sleep Switch	AE
174	LBOSG0050AFFW	Shaft, Tape/Radio/Sleep Switch Knob	AC
176	LANGQ0417AFFW	Bracket, Pause Switch	AB
177	QTANB9064AFFN	Battery Terminal, Positive Side	AB
178	MSPRC0052AFFN	Battery Spring, Negative Side	AB
179	LHLDP0005AF0	Holder, Meter Lighting Lamp.	AA
180/ SW9-A	MSPRP0061AFFN	Contact, Lighting Switch, Movable Side	AB
181/ SW9-B	MSPRP0047AFFN	Contact, Lighting Switch	AA
182	QFSHC2050AFZZ	Holder, Fuse	AE
183	PSLDM3107AFFW	Shield Plate, Motor	AA
184	LX-WZ0019AFFW	Lug, Volume Controls Earthing	AA

REF. NO.	PART NO.	DESCRIPTION	CODE
185	LBOSA0050AFFW	Boss, Fuse Holder	AB
186	LHLDC1036AFZZ	Holder, Bar Antenna	AB
187	LX-NZ0052AFFD	Nut, Bar Antenna Holder	AA
188	NDRM-0061AFZZ	Drum, Dial Cord Variable Tuning Side	AC
189	NSFTZ0013AFZZ	Spacer, AM Dial Cord Drum	AA
190	LBOSG0051AFFW	Guide, Tape/Radio/Sleep Switch Connecting Lever	AB
191	MLEVP0050AFZZ	Lever, Tape/Radio/Sleep Switch Connecting	AB
192	QJAKH0051AF00	Jack Plate Assembly with Jacks and RIF Switch	AM
193	LHLDZ0005AG00	Holder, Built in Microphone	AB
194	RMICC0001AFZZ	Built in Microphone	AP
	QPLGS0103AGZZ	Plug, Erasing	AE
	RPHOE0013AFZZ	Earphone	AD
	QACCB0003AG0V	Cord, AC Power Supply (Without AC Plug)	AL
	QACCK0002AG0V	Cord, AC Power Supply (With AC Plug)	AP
SW1-A ~F	QSW-S0057AFZZ	Switch, Radio-Tape Selector	AH
SW2-A ~J	QSW-S0099AFZZ	Switch, REC/PB	AK
SW3-A ~D	QSW-P0108AFZZ	Switch, Radio Monitor (SW3-A), FM Selector (SW3-B), MW Selector (SW3-C) and LW Selector (SW3-D)	AR
SW4	Not Available	Switch, RIF (Radio Interference Filter)	–
SW5	QSW-B0028AGZZ	Switch, Pause	AG
SW6	QSW-B0028AGZZ	Switch, Tape Selector	AG
SW7	Not Available	Switch, Built-in Microphone ON-OFF	–
SW8	QSW-F0044AGZZ	Switch, Main	AE
SW9-A/ 180	MSPRP0061AFFN	Contact, Lighting Switch, Movable Side	AB
SW9-B/ 181	MSPRP0047AFFN	Contact, Lighting Switch	AA
SW10	Not Available	Switch, AC/DC Selector (Part of SO101)	–
J101-A ~D, SW4/ 192	QJAKH0051AF00	Jack, Ext. MIC (J101-A), Remote (J101-B), Ext. SP (J101-C), REC Monitor (J101-D) and RIF Switch (SW4)	AM
J102	QJAKC0003AFZZ	Jack, External DC Power (6V)	AD
SO101/ SW10	QSOCA0253AFZZ	Socket, AC Supply with AC/ DC Switch (SW10)	AG
SO102	QSOCE0410AGZZ	Socket, Voltage Selector	AH
SO103/ SW7	QSOCD0503AGZZ	Socket, Record/Playback with Built-in Microphone ON-OFF switch (SW7)	AG
ME101	RMTRE0029AFZZ	Meter, Battery Condition/ Tuning/Record Level	AS
PL101	RLMPM0021AFZZ	Lamp, Dial Illumination	AE
PL102	RLMPM0021AFZZ	Lamp, Meter Illumination	AE
F101, F102	QFS-C801CAGNI	Fuse, 800mA	AE
SP101	VSP0012P-128A	Speaker, 8-ohm	AU
	QPRBF0057AFZZ	P.R.W. Board, Tuner	AR
	QPRBF0056AFZZ	P.R.W. Board, Audio	AS
	QPWBF0240AFZZ	P.W. Board, Recording Indicator	AC
	QPWBF0241AFZZ	P.W. Board, Motor	AD
	QPWBF0242AFZZ	P.W. Board, Pause, Tape Selector	AC

TECHNICAL INFORMATION

As IC(Integrated Circuit) used in GF-3000H has been modified to improve its capacity, please also modify the value of Resistors according to IC, referring to the following Parts List, when you change the IC.

REF. NO.	OLD	NEW
IC101	RH-IX0934AFZZ (BA303)	RH-IX1008AFZZ (BA306)
R144	270 ohm	Delete
IC101 EQUIVALENT CIRCUIT	 R2 10K R4 1.3K R3 6.8K R5 160 R1 750 1 2 3 4 5 6 7 IC101	 R2 10K R4 1.3K R3 6.8K R5 62 R1 200 1 2 3 4 5 6 7 IC101

INFORMATION

To improve the performance of Model SA-607H, controls will be changed as follows:

REF. NO.	ERROR	CORRECT
VR102	RVR-B0057AGZZ	RVR-B0052AGZZ